TEXTILE READER'S GUIDE

Classification of Contents

Fibers 1171
Yarn Production 1174
Fabric Production 1179
Standard Finishing 1185
Dyeing and Printing 1186
Special Finishing 1188
Testing and Measurement 1189
Textile Mills 1196
Chemistry and Physics 1202
Textile Education and Research 1204
Index to Authors ..... Inside Back Cover

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A.

Copyright 1952 by the Institute of Textile Technology.

(An explanation of the classification used in the DIGEST was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors.)

Subscriptions are available to Non-members of the Institute. The rate is $25.00 per year.

Advertising rates are available upon request.

Abstracts

FIBERS A

Natural Fibers A 1

Textile World's cotton-fiber table.

P. M. Thomas, Ed. *Textile World, 103,* 85-100 (January, 1953).

Cotton, more than any other fiber, is undergoing change. Few years pass without at least one variety dropping from the rank of commercial importance and one or more varieties, bred for better yield and spinning character, joining that rank. A brief look at some of the things that are happening to cotton is given in this chart. Some of the factors discussed are: how the use of cotton is increasing; how mills select their cotton; and what is happening to cotton varieties.

What you can expect from 1952 cotton

John M. Cook. *Textile World 103,* 101-103 (January, 1953).

U. S. D. A. fiber and spinning tests show that, based on first pickings—Fiber strength is the best in seven years, except for Texas; Fineness is about the same as for the 1951 crop; Yarn strength is a little lower, except for California; and yarn appearance is better for the Southeastern and Central sections, the same for Texas, and a little lower for California. A warning against giving too much importance to a single fiber property in estimating spinning quality is included.

Why cottons behave differently

Lyle E. Hessler. *Tex. Ind. 117,* 94-96 (January, 1953).

Article is the sixth in a series dealing with research work and the practical application of research findings in the mill. This article deals with the subject of cottons grown in different environments, and the effect of growing conditions on the fiber. Fibers from cotton grown during drought may be immature, while too much moisture results in longer but weaker fibers. Also covered is the effect of weathering, which results in degradation of the cellulose, and picking too soon, which promotes micro-biological damage. The effect of fiber properties on dyeing is mentioned, and suggestions for eliminating some of the irregularities in dyeing are made.

TEXTILE READER'S GUIDE

Classification of Contents

Fibers 1171
Yarn Production 1174
Fabric Production 1179
Standard Finishing 1185
Dyeing and Printing 1186
Special Finishing 1188
Testing and Measurement 1189
Textile Mills 1196
Chemistry and Physics 1202
Textile Education and Research 1204
Index to Authors ..... Inside Back Cover

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A.

Copyright 1952 by the Institute of Textile Technology.

(An explanation of the classification used in the DIGEST was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors.)

Subscriptions are available to Non-members of the Institute. The rate is $25.00 per year.

Advertising rates are available upon request.

Abstracts

FIBERS A

Natural Fibers A 1

Textile World's cotton-fiber table.

P. M. Thomas, Ed. *Textile World, 103,* 85-100 (January, 1953).

Cotton, more than any other fiber, is undergoing change. Few years pass without at least one variety dropping from the rank of commercial importance and one or more varieties, bred for better yield and spinning character, joining that rank. A brief look at some of the things that are happening to cotton is given in this chart. Some of the factors discussed are: how the use of cotton is increasing; how mills select their cotton; and what is happening to cotton varieties.

What you can expect from 1952 cotton

John M. Cook. *Textile World 103,* 101-103 (January, 1953).

U. S. D. A. fiber and spinning tests show that, based on first pickings—Fiber strength is the best in seven years, except for Texas; Fineness is about the same as for the 1951 crop; Yarn strength is a little lower, except for California; and yarn appearance is better for the Southeastern and Central sections, the same for Texas, and a little lower for California. A warning against giving too much importance to a single fiber property in estimating spinning quality is included.

Why cottons behave differently

Lyle E. Hessler. *Tex. Ind. 117,* 94-96 (January, 1953).

Article is the sixth in a series dealing with research work and the practical application of research findings in the mill. This article deals with the subject of cottons grown in different environments, and the effect of growing conditions on the fiber. Fibers from cotton grown during drought may be immature, while too much moisture results in longer but weaker fibers. Also covered is the effect of weathering, which results in degradation of the cellulose, and picking too soon, which promotes micro-biological damage. The effect of fiber properties on dyeing is mentioned, and suggestions for eliminating some of the irregularities in dyeing are made.

Wool/protein-fiber blends in felt manufacture

T. Barr, and D. Haigh. *Tex. Mfr. 78,* 393 (August, 1952).

Article describes some of the troubles encountered when diluents, such as cotton or rayon, are incorporated with animal fiber in felts. However, it appears that protein fibers would offer a solution to the problems of dyeing and felting. From the results of tests, the authors conclude that the addition of protein fibers to wool blends for the manufacture of felt for the production of hats gives a material of comparable felt quality showing only slight inferiority with a 20% protein fiber content.

Artificial fibers A 2

Decomposition of cellulose acetate

A. A. Freiman and V. A. Shcherbakova. *J. of Applied Chem. U. S. S. R. 24,* 853-59 (July, 1951); *in English.*

An investigation is presented involving the changes of molecular weight and the acetyl number of cellulose acetate during its thermal, hydrolytic, and thermohydrolytic decomposition.

Ardil protein fiber blends best with wool

Anon. *Textile World 103,* 125, 224, 226, 228 (February, 1953).

This peanut-meal-solution fiber is not as strong or elastic as wool, but it is resilient and warm and can be made fine enough to mix with finest merino wools. The fiber dyes like wool and can also be knitted. Article contains 23 questions and answers concerning Ardil.

Fiber conversion-factor tables make fabric-matching easier

J. B. Dickson. *Textile World 103,* 128-130 (February, 1953).

A previous article (*Textile World,* October, 1952, page 113) introduced the all-fiber system for the designing of fabrics. It provided a table of comparative yarn diameters, and a table on comparative fiber densities and conventional diameter factors to be used by mill designers to short-cut their calculations. In the present article, a table is given on the conversion to the all-fiber system of other factors that must be considered in multifiber designing. Formulas for figuring compact cover factors in all fibers are given.

Fiber processing—New fibers and changed fibers call for revised thinking

James H. Kennedy. *Textile World 103,* 98-100 (February, 1953).

Knowledge of handling of all fibers is an important asset, whether processing cotton, wool, synthetics, or blends. The article discusses new machinery and techniques for opening, blending, picking, carding, combing, drawing, roving, spinning, twisting, warping, weaving, and knitting.

Improved methods for processing dynel on cotten type machinery

P. C. Kochhar. *Tex. Ind. 117,* 90-93 (January, 1953).

A recent study of dynel processing made in the Department of Textile Research, School of Textiles, N. C. State College, produced improved cotton-system processing methods. In addition, information was produced for the first time on the effect of twist, denier, and yarn number of strength of dynel yarns spun from fibers of various deniers and lengths. The accompanying chart gives full recommendations on processing equipment, speeds, and settings recommended for the fibers studied. These recommendations have been used successfully by several southern mills.

Manufacture of fabrics from blends of fibers

G. G. Whytlaw. *Textile Manufacturer 78,* 391 (August, 1952).

Blending of fibers has become more and more important, because many desirable properties can be most easily incorporated in a fabric by blending different fibers. Some of the primary factors in blending are: (1) use fibers which do not have a great range of staple length, (2) spinning is affected by fiber diameter and fiber length, (3) fibers with the same range of extensibility should be used together, (4) dyeing properties of the different fibers must be taken into consideration. Several techniques for blending are described in the article, among them floor blending, automatic hopper type feeder blending, and blending of breaker laps on the scutcher.

Recent developments in preparing cellulose acetate for spinning into rayon fibers

Anon. *Tex. Ind. and Fibres 13,* 332-35 (October, 1952).

In the manufacture of Acetate rayon, it is still necessary to convert purified cellulose to the tri-acetate, and then hydrolize it back to the secondary acetate for spinning. While it has not so far proved possible to make the required secondary cellulose acetate directly, considerable improvements have been made in those operations by which the tri-acetate is converted into a satisfactory and stable secondary acetate. This article

describes some of the recent developments in this field.

YARN PRODUCTION B

Fiber Preparation B 1

Careful handling means good garnetting

E. H. Helliwell. *Tex. World 103,* 128-29 (January, 1953).

Garnetting isn't what it used to be. At every process from sorting through garnetting, careful handling and accurate machine settings are resulting in good fiber to extend our virgin-wool supply. Article describes methods and equipment used by the Abrants Garnetting Co., Woonsocket, R. I., in producing good garnetted stock which, it is said, is often better than some types of inferior virgin wool.

Garnetting plant saves money with deisel-driven generator

E. H. Helliwell. *Tex. World 103,* 143, 218, 220 (January, 1953).

Lower power costs and greater operating flexibility are shown with a plant-operated diesel generator. The 150 h.p. engine, which used No. 2 fuel oil, furnishes electricity for lighting and processing. Little attendance is necessary, and maintenance costs have been low.

Inch-by-inch lap variation measured at picker

Anon. *Tex. Ind. 117,* 159-60 (January, 1953).

Inch-by-inch variation in picker laps weighing from 10 to 20 ounces per yard is measured without damage to the lap by the Lap Vari-Meter, an instrument for use with an evenness tester. The equipment consists of a condenser measuring field, which is of rigid construction and made in the form of a tube, mounted in front of the picker calender roll and behind the lap winding rolls. Once the condenser has been mounted on the machine, no other adjustments are required.

Use this report to check your opening and picking

E. H. Helliwell. *Textile World 103,* 143, 196, 199-200 (February, 1953).

This article gives procedures and settings recommended for improving performance of opening and picking processes in a New England textile mill. Methods of feeding to get the best blending and maximum opening from the opening sections, and maintenance of the picker sections are discussed.

Carding and Combing B 2

Let's take another look at metallic card clothing

James H. Kennedy. *Textile World 103,* 135, 194, 196 (February, 1953).

Columbus Manufacturing Co., Columbus, Georgia, is now making cotton gabardines, drills, and sheetings with metallic wire on all of its 194 cards—some of the cards have run over 20 years without grinding, and they have to be stripped only once a week. The procedures in grinding, setting and stripping are discussed, as well as serviceability of card and quality of product.

Moving cards? Try this method

Anon. *Textile World 103,* 166 (February, 1953).

Article describes a special dolly which is bolted to card after it is raised, so that card can be easily rolled into its new position.

Device lubricates card flat chains automatically

Anon. *Tex. Ind. 117,* 73 (January, 1953).

A simple, inexpensive way to automatically apply oil to card flat chains, known as the M & J Card Flat Lubricator, has been designed for use on most makes of cards. Advantages claimed are: (1) Life of flats is increased; (2) Life of case hardened worm gears that drive the flats is increased; (3) Flats can be set more accurately due to the elimination of "bucked flats" (flats that fail to lie down on flexible bend).

Eighty-four inch woolen cards pay off at New England mill

Michael J. Koroskys. *Tex. World 103,* 84 (January, 1953).

One 84-in. card at a small New England woolen mill is taking care of four 144-spindle spinning frames in an efficient, smooth-running setup. Production is 110 lb. per hour at 90% efficiency, making unit costs lower, and yarns are better. Greater care must be exercised in grinding and stripping, but speeds and settings are conventional.

Hollow twisting spindle has no flyer, ring or traveler

Anon. *Textile World 103,* 150 (February, 1953).

The Sirhach HZS high-twist twisting spindle, which can double the twisting speed of ordinary high-twist twister because it has no flyer, ring, or traveler has been developed in Switzerland. The spindle is used for inserting additional twist in yarn such as crepe or voile yarns, but cannot be

used for plying two ends together. Time studies show that up to 1200 spindles can be handled by a single operator, with 12,000 r.p.m. spindle-head speed and ordinary amounts of yarn in the creel.

Drafting and Roving B 3

Fiber condenser

Eric Cottam and Ronald B. Cottam, U. S. P. 2,621,376 (December 16, 1952).

A device for condensing textile fibers comprises a roller with a groove of bell-mouthed shape and two driven rollers which rotate the grooved roller wherein the fibers take an angular path when in the groove and move toward the bottom thereof.

Fiber drafting

Robert C. Wilkie (Pacific Mills); U. S. P. 2,621,372 (December 16, 1952).

Apparatus and method for drafting a sliver wherein an advancing sliver is compacted at one or more stages to definite cross-sectional areas predetermined in proportion to the weight of the sliver at the points of compression as the fibers are drawn from the compacted sliver.

Recent improvements in Ideal drawing equipment

Anon. *Tex. Ind. 117*, 165 (January, 1953).

Following are improvements that have been made in the Ideal High Speed Ball Bearing Drawing Equipment: (1) All gears, including change gears, are spiral type; (2) a new type of seal keeps lint out of ball bearings; (3) a heavier calendar roll bearing is used; (4) Gold-finished spoons eliminate tagging; (5) An evener motion for drafting rolls is available if desired.

Spinning B 4

Are your top rolls in top shape?

Richard Crowsley. *Tex. World. 103*, 120-21, 210-214 (January, 1953).

Careful attention to top rolls can save money. Bad top rolls can cause uneven drafting, can increase ends down, and can make more waste. Article points out some of the items to check on top rolls drawing, roving, and spinning. Some of the topics are: slippage, traverse, roll coverings, wear, and clearers.

Check these tips for running synthetics on wool systems

M. J. Koroskys. *Textile World 103*, 111 (February, 1953).

The optimum conditions for running wool haven't been determined—much less the optimum conditions for the new synthetics. Therefore, almost any information on running synthetics on machines built for wool fibers is useful. Included in the article are tips on carding, gilling and dyeing of synthetics run on the wool system.

Novel Yarn

O. A. Battista (American Viscose Corp.); U. S. P. 2,621,392 (December 16, 1952).

The invention provides novel composite yarns which comprise at least two singles yarns, of which one consists of regenerated cellulose fibers and the other consists of cellulose ester fibers.

Nylon crepe fabric made by Duplan

Anon. *Tex. Ind. 117*, 83 (January, 1953).

The Duplan Corporation has announced the development of nylon crepe fabrics said to have the beautiful pebble surface of a true crepe. The new nylon crepe will not sag, it is claimed. It has the heat setting qualities of nylon which make it possible to design garments with permanent pleats. No puckering at the seams and beautiful draping qualities are other advantages.

Top roll features interchangeable parts

Anon. *Tex. Ind. 117*, 153-54 (January, 1953).

Top roll maintenance costs can be reduced by utilizing Faultless Ball Bearing Top Rolls with interchangeable parts. Usable parts are saved and only the worn items replaced. Self-contained bearing units have a heavy load rating, and assure long service. Replacement of unit is accomplished by loosening one setscrew, removing cot, sleeve and bearings unit, and reversing order for assembly.

Use of constants speed doffer-cost calculations

N. H. Pomfret. *Textile World 103*, 131, 228, 230, 232 (February, 1953).

Doffer cost in spinning can be figured from the simple formula, (Doffer cost per frame hank equals constant divided by yarn number). When yarn number is changed, the mill can quickly figure the new doffer cost. The basic formulas and a detailed explanation of the calculations necessary to get the correct constant are included in this article.

Why not variable spinning speeds, metallic card clothing in U. S. A. ?

Herbert L. Werner. *Tex. Ind. 117*, 80-83 (January, 1953).

Variable speed spinning and metallic card

clothing have long been used in Europe with good results, and wider acceptance in the U. S. is urged. Advantages of variable speed spinning are improved yarn quality and higher production, while disadvantages are higher initial cost, and increased maintenance cost. Metallic card clothing offers advantages of application to cotton and synthetics, reduction in neps, infrequent stripping and grinding, reduction in stripping waste, increase in sliver uniformity and increased production per card. Disadvantages are higher installation cost and low availability, increased card weight, high repair cost, more dust in card room, and more exacting work required of the fixer.

Winding and Spooling B 5

Fully automatic quiller for smaller mills or for wide variety of counts

Anon. *Tex. Ind. 117*, 71 (January, 1953).

Designed especially for smaller mills and mills with widely diversified production is the Abbott Fully Automatic Radial quiller for winding cotton, spun rayon, filament rayon, woolen and worsted yarns, etc. Up to 2,000 bobbins per operator per hour can be produced on the machine, depending on the type of yarn. Winding speeds are 250 to 350 r.p.m. and mechanical efficiency should exceed 90%.

Winding apparatus

Ralph M. Stream and Ivan G. Brenner (Owens-Corning Fiberglas Corp.); U. S. P. 2,622,810 (December 23, 1952).

A winding apparatus wherein an empty take-up spool automatically replaces the filled spool in a continuous winding system.

Yarn cleaner

Ernest R. Swanson (Universal Winding Co.); U. S. P. 2,622,305 (December 23, 1952).

A slub and yarn cleaner comprises a fixed member and a movable member adjustable toward and away from the fixed member to regulate the size of the opening therebetween and a scraper-blade on the movable member.

Special yarns B 7

Bonding of yarns to rubber

E. E. Tallis (Courtaulds Ltd.); *Rubber Abs. 30*, 483 (November, 1952); B. P. 676,703 (July 30, 1952).

The bonding of cellulose yarns, particularly viscose rayon yarns as used for tire cords or in

belting, is carried out by vulcanizing the rubber in contact with the yarns which contain or have been treated with a phenol aldehyde condensation product having aliphatic side chains including an ethylenically unsaturated carbon-carbon linkage.

Crimped yarns

Hans M. Hemmi (Sandox Ltd.); U. S. P. 2,623,266 (December 30, 1952).

Crimped yarns consisting of organic compounds and being crimped in such a manner that a longitudinal section line therethrough consists of successive, interconnected, alternately oppositely directed circular portions.

Yarn applications B 9

Drying apparatus

Victor G. Forzley and Mario Sonnino (American Cyanamid); U. S. P. 2,622,182 (December 16, 1952).

Apparatus for drying yarn comprises a pair of rotatable yarn advancing hollow rolls wherein a hollow shaft within each of the rolls is fitted with an electrical heating unit.

Textile treatment

Donald Finlayson and Maitland W. Alford (Celanese Corp. of America); U. S. P. 2,622,961 (December 23, 1952).

Gaseous treatment of filamentary textile material at supersonic and subsonic gas velocities.

FABRIC PRODUCTION C

Yarn preparation C 1

A 5-minute review of warp-sizing

Floyd A. Lewis. *Tex. World 103*, 137, 224-230 (January, 1953).

Three percent of cloth-cost dollar goes to warp sizing; yet, warp-sizing conditions may affect weaving costs up to 25%. This article defines a good sizing material, and tells how best results can be obtained most economically.

A new type of squeeze roller

Anon. *Textile Mfr. 78*, 421 (August, 1952).

Article describes a new type of squeeze roller, in which precision made, individually molded rubber rings are accurately dovetailed together on a steel shaft. This construction permits any ring to be replaced easily and quickly, and roller life is said to be much better than wool top-covered rolls.

Cluett-Peabody installs new slashers and controls

Frank Suss. *Textile World 103*, 137-39, 190, 192 (February, 1953).

Cluett-Peabody & Co. has replaced six old slashers with three new Uxbridge hot air slashers, which run at 65 to 75 r.p.m. One slasher has regain control which regulates warp drying by varying speed of slasher, while the other two regulate drying by varying temperature. Preheating the size and admitting it over the length of the size box eliminated the cyclic moisture changes, where the yarn fluctuated between overdried brittleness and underdried siftness.

Measuring plate helps to figure warp take-up

J. W. Townsend, Jr. *Textile World 103*, 166 (February, 1953).

Article describes a template for marking a section of warp on the loom at exactly nine-inch interval. By measuring the distance between marks after the cloth has been taken off the loom, the per cent take-up can be easily calculated.

Percent of size on warps is automatically controlled

Anon. *Textile World 103*, 152 (February, 1953).

A new size box that automatically blends size concentrate and water at a temperature just under boiling, that delivers all ingredients of the mix to the box at the rate at which they are required by the warp, and that at the same time dilutes the size concentrate to the point that insures the taking up of the size at the same rate it is being delivered, has been put on the market by Joseph Hibbert & Co., of Darwen, Lancashire, England. Variations in size properties are automatically compensated for, and the percent size applied is said to be accurately maintained beam after beam and set after set. The results are reproducible at any time.

Slashing problems discussed at Georgia TOE

Anon. *Tex. World 103*, 108-9, 198-202 (January, 1953).

Representatives from 14 Georgia mills discussed nine current problems in slashing at the fall meeting of the Textile Operating Executives of Georgia, held at Georgia Tech recently. The nine topics discussed are: slasher cleaning, squeeze roll maintenance, synthetic rolls, homogenizers, thin-boiling starches, size pickup, slasher pumps, leasing of warps, and prevention of rolled selvages. Only the solutions which give the best results to most mills are included in the article.

Warp size applied at room temperature

Anon. *Tex. Ind. 117*, 73 (January, 1953).

A warp size called "Kosize," which can be applied at room temperature to cotton, spun rayon, worsted, and filament viscose, eliminates need for heated storage kettles and size boxes. Other advantages are: quick, easy preparation; easier cleaning of size kettles and size boxes; elimination of viscosity changes; longer life for squeeze rolls and blankets; more uniform sizing; and easy removal.

Weaving C 2

Cloth wrapping simplified

Staff. *Tex. Ind. 117*, 88-89 (January, 1953).

Article describes a homemade machine which is said to facilitate the wrapping of cloth rolls with heavy waterproof paper. Machine is simple in construction and easy to operate, and the wrap is always smooth and tight.

Filling mixing loom for woolen, worsted, and bleached, and blended fabrics

Anon. *Tex. Ind. 117*, 154 (January, 1953).

For the weaving of fabrics requiring mixing of filling only, a new simplified loom has been developed by Crompton & Knowles. It is available only as a 2 x 1 box filling mixing, but with several choices of construction. Shedding motion may be Knowles head, dobby or end cam; picking may be either batwing or cone; clutch either cork or double plate friction type. Other features are: rotary magazine, new scissors type thread cutter, electric warp stop motion, and new type of center stop motions.

Georgia mill weaving practices

Staff. *Tex. Ind. 117*, 133, 135, 137, 139 (January, 1953).

A number of weave room practices in Georgia mills is reflected in this report of the second half of the discussion meeting held in Atlanta last October by the Textile Operating Executives of Georgia. Among the topics discussed are: Methods of moving looms, experience with endless checkstraps, temple rolls for synthetics, tight selvages on rayon, life of harness frames, vibrating whip rolls, take-up roll coverings, waste control dobby head maintenance, shearing machine operation, loom fixing practices, and jerked-in filling on multiple box end.

Good carpets from good cops

Staff. *Tex. Ind. 117,* 78 (January, 1953).

Vacuum is employed at a New Jersey carpet mill to impregnate filling cops with liquid size. Treated jute, cotton, or cojute cops can be handled without troublesome ravelling, filling unwinds more easily in shed, and woven carpet has superior texture and pile quality. Article explains theory of the process and describes equipment and methods used.

How Exposition cotton mills brought 222 looms up to date

E. A. Satterfield. *Textile World 103,* 118-19 (February 1953).

Article tells how Exposition Cotton Mills used new drives and spreaders to increase speed of 222 E-model looms from 15 to 170 p.p.m. The procedure used is described step by step.

Hub-mounted camshaft gear

R. J. Tucker, Jr. *Tex. Ind. 117,* 107-108 (January, 1953).

On the loom camshaft drive gear, the cams apply an impact load at two points 180 degrees apart, causing wear over two or three teeth at each place. Replacement of gears usually mean removal of camshaft and about six hours idle time for the loom. W. H. Leathers, of Patterson Mills, Roanoke Rapids, N. C., designed a demountable hub upon which the gear was mounted with six equally spaced bolts. Thus, the gear can be rapidly disconnected from the hub, rotated in 60-degree steps, and remounted for operation. One man can perform this change in 15 minutes.

Loom brake release gives constant warp tension

Anon. *Tex. World 103,* 158 (January, 1953).

This constant-rate-of-tension letoff for warp beams is controlled by a special asbestos-lined brake shoe, which in turn is controlled by a feeler bar. Once letoff is set, no further adjustment is necessary. As beam diameter decreases, the feeler automatically releases the brake just enough to keep yarn tension constant.

New Draper XD loom has 2 x 1 filling motion

Anon. *Tex. Ind. 117,* 71 (January, 1953).

Improved design of the Draper Model XD loom, the addition of new mechanisms, and the increase in warp and filling package capacity make it profitable to operate on a wide range of fabrics. Improvements include (1) 2 x 1 filling motion; (2) positive acting w-2 head; (3) setmark reducing mechanism; (4) yarn beams up

to 32″ in diameter; (5) 3″ throw crank shaft; (6) 2-7/16″ diameter cam shaft; (7) 72″ width loom having an 80¾″ reed space.

Shutterless loom uses air and inserts 350 ppm.

Anon. *Textile World 103,* 152 (February, 1953).

A shuttleless loom that has only 25% as many parts as an ordinary automatic cotton loom, and that blows picks through a small shed at 350 p.p. has been developed in Sweden. The filling supply is a single large cone at the side of the loom. Yarn is first drawn off, then blown through the shed by a blowing nozzle.

Shuttleless narrow-fabric loom weaves 2,000 ppm

Richard C. Scott. *Tex. World 103,* 110-111, 196 (January, 1953).

Disco Industries, Inc., of New York has developed a fast-weaving narrow-fabric filling motion in which a needle with an eye in it transports a single end of filling back and forth rapidly through sheds up to 4 in. wide. Each shed contains two picks. Far end selvage is formed by means of a latch needle, and both filling and an extra locking end from the creel pass over the needle in a circular motion to form a loop selvage. Production of single-head units is expected to be up to 500 yards per day.

Siren for weave room beam hoist

Staff. *Tex. Ind. 117,* 84 (January, 1953).

A safety device used at Cone Mills Corp. Pineville mill is a large siren, driven by an electric motor, which is sounded by the beam hoist operator before he starts down the aisle with a beam. The siren is easily heard throughout the weave room over the noise of the looms, and any weaver can quickly note whether the beam is headed in his direction. The Cone Mills Suggestion System, under which this idea was submitted, differs from most suggestion systems in that the ideas from employees, filled out on a standard form, do not go into a suggestion box but are given to the assistant overseer of the department. The suggestion then passes through the overseer, and superintendent, each of whom writes his comments on the form, to the vice-president. The vice-president writes the employee a letter, congratulating him or her, and a check is enclosed for acceptable suggestions.

The oscillating reed and shuttle boxes

W. Middlebrook. *Textile Manufacturer 78,* 407-409 (August, 1952).

A technical description of the oscillating reed, also the difference between the plain boxes of an overpick loom and those on an underpick model, including picking and checking arrangements, etc. The primary idea of the oscillating reed is to beat up the filling with a sloping reed, which makes it easier to get slubs and beads of fluff through the dents. The differences in overpick and underpick looms are illustrated and explained, and the advantages of each are given.

Special Fabrics C 4

Bonded-fiber fabrics

Howard E. Shearer. *American Dyestuff Reporter 41*, 874-79 (1952).

It is shown that bonded fibrous web materials which have now become well established under the name of Nonwoven Fabrics may be varied in their composition and structure to give a range of physical characteristics comparable to that obtained in woven fabrics. These features are obtained through many novel arrangements of existing textile equipment as well as through the use of newly developed machines especially for the purpose which, in a continuous process, convert the raw fiber into finished fabric. Equipment for carrying out these operations by various means is diagrammatically illustrated and described by the author in relation to its use with fibers of different descriptions, bonding media and product features.

High quality tricot fabrics

Staff. *Tex. Ind. 117*, 109-111 (January, 1953).

A South Carolina mill is making tricot fabric without shadow marks and with only a fraction of the stop marks formerly produced. Mechanical beam letoff, magnetic needle-down attachment, and other refinements on Reiner Model RT-4 are credited for the good results. Article describes the improvements in the RT-4 Model, and shows its superiority over older model tricot machines.

Soil resistant fabric

E. J. Cogovan and E. D. Frederici (Mohawk Carpet Mills, Inc.); U. S. P. 2,622,307 (December 23, 1952).

A fabric having a pile resistant to soiling comprises a backing and pile yarns wherein the pile yarns include vegetable and synthetic fibers and are coated with silica on their outer or exposed portions only.

Fabric applications C 6

Stretching and guiding tubular textiles

Julien Dungler, U. S. P. 2,623,263 (December 30, 1952).

Apparatus for guiding and stretching a tubular fabric comprises external guide means, internal guide means, and means which transmit a force upon the inner guide means through the fabric for urging the inner guide means toward the outer guide means.

STANDARD FINISHING D

Bleaching acetate and nylon fabrics with peracetic acid

Anon. *Tex. Ind. 117*, 96 (January, 1953).

The use of peracetic acid 40% as a textile bleaching agent is of particular interest to mills handling acetate rayon or nylon as such or in mixtures with cotton or viscose rayon, according to information contained in Buffalo Electro-Chemical Company's Bulletin No. 44 recently published. Superior whites are obtained, the bulletin states, and chemical modification (saponification) of acetate rayon is avoided.

Bleaching, dyeing and finishing—New machines, processes and products spark finishing progress

George M. Moisson. *Textile World 103*, 100-102 (February, 1953).

New finishes, blends, and cost-cutting processes are helping cotton and wool manufacturers meet competition and consumer demand for synthetics. The trend continues toward blending synthetic and regenerated fibers with wool, silk, and cotton to bring out the best physical properties of each.

Continuous deying machine promises better, speedier work

Anon. *Tex. Ind. 117*, 108 (January, 1953).

A new dyeing and scouring machine, known as the Bond Machine, promises to bring better, speedier, and more flexible continuous dyeing to the textile industry at considerable savings in dyestuffs and floor space, reports indicate. The pilot model of the machine is capable of operating at any speed between 20 and 120 yards a minute, depending on the type of fabric and class of dyestuff used. The explanation of the machine's exceptional uniformity and speed in dyeing lies in two metal plates through which the fabric passes in the dyeing process. The plates are perforated in a precisely calculated pattern which enables the dye solution to be squirted evenly on both the face

and back of the fabric. Fabrics dyed on the pilot model include cotton, wool, rayon, acetate, high tenacity rayon, nylon, "Orlon," and "Dacron." It is also suitable for dyeing blends of fabrics.

Detergency tester offers time and versatility economies

Anon. *Textile World 103*, 156 (February, 1953).

A detergency tester, capable of a wide range of mechanical actions and capable of being reset with a high degree of accuracy, is now available for making most routine detergency tests. Other advantages are a low coefficient of variation between tests, ability to give 49 tests per sq. yd. of cloth, a reduction in manhours per test, and suitability for tests in both aqueous and organic-solvent media.

Do your oval-reel continuous-chain washers give trouble?

William O'Keefe. *Tex. World 103*, 126-27, 220-224 (January, 1953).

Short lines may be caused by poor design or by poor loading technique. This article tells how short-lines may be caused, and gives tests for finding them and suggestions for correcting fault.

Fabric dyeing

George D. Sutton, U. S. P. 2,622,958 (December 23, 1952).

A process for dyeing cellulose acetate comprises treating the material in a dyeing bath consisting of a vat dye stuff, an alkali, a reducing agent, and a cellulose acetate swelling agent.

Laboratory methods in the wool textile industry

Stoves, J. L. *Tex. Ind. and Fibres 13*, 317-18 (October, 1952); No. 10.

This article is a discussion of true soaps used in wool processing, chiefly sodium or potassium salts of lauric, oleic, palmitic, and stearic acids. A brief background of soap chemistry and the analytical methods used in the laboratory are described.

DYEING AND PRINTING E

A recent important development in aniline black dyeing

A. J. Hall. *Tex. Ind. and Fibres 13*, 322-23 (October, 1952); No. 10.

Article discusses the application of aniline black dyes to cellulose fiber materials, and describes a recent development which makes application easier in both dyeing and printing.

Carbide research cuts Dynel dyeing cost

Anon. *Textile World 103*, 160 (February, 1953).

Carbide's Development Service Lab reports cost cuts on individual colors ranging from 30 to 59%. The new dye formulations are equal to or better than the old in colorfastness and depth of shades achieved, according to cotton wash and Fadeometer tests. Improvements by reformulation were obtained primarily in acetate and acetate-acid color dyeings and are the results of a program devoted to the more effective use of the newer dyestuffs and methods of application. Formulas with dyeing and finishing procedure are given.

Cellulosic textiles

Jos. W. Schappel (American Viscose Corp.); U. S. P. 2,623,807 (December 30, 1952).

A cellulosic textile material having reduced water retention and reduced water retention and reduced difference in dry and wet extensibility and method for so-producing which comprises treating the textile with a resin forming urea product and a sulfonyl compound and then heating the textile to polymerize the compound.

How to apply resins to spun rayons

A. C. Tate. *Tex. World 103*, 106-242 (January 1953).

Resins have been a boon to spun rayons. Such fabric characteristics as stability, resilience, water resistance, and wrinkle resistance are improved by urea-formaldehyde and other resins. This article includes much information on handling of goods, dyeing, applying resins, curing, and removal of excess resin.

Linen-like effects on textiles

Arnold L. Lippert and Wm. P. Hall (Jos. Bancroft and Sons Co.); U. S. P. 2,622,994 (December 23, 1952).

The process of imparting a lines-like finish to fabrics of rayon and cotton comprises impregnating the fabric with a resin of the acid-catalyzable aldehyde type and an acid providing catalyst wherein the fabric is heated to set the resin.

New ideas and new techniques keep this dyehouse modern

George M. Moisson. *Textile World 103*, 120-21 (February, 1953).

Article tells how Globe Dye Works Co., Philadelphia, uses high-temperature and high-pressure dyeing to get faster and brighter shades on Da-

cron and Orlon with a saving of 25 to 35% in dyestuff. Warp, skein and package dyeing techniques are described.

Pacific Mills DAP process improves wool dyeing

George M. Moisson. *Textile World 103*, 110-11, 202, 204 (February, 1953).

The diammonium phosphate (DAP) process for wool dyeing takes longer than regular dyeing procedures, but the following advantages are claimed. (1) The fastest colors can be used. (2) Heavy, high-twist fabrics are uniformly dyed. (3) All dyestuffs yield more color value—up to 40%, average 30%. (4) Costly reworks are practically eliminated. (5) Evenness, bloom, and solidity of shade are reproducible. Article contains an explanation of the process and the techniques used.

Resin impregnated fabrics

Arnold L. Lippert and Wm. P. Hall (Jos Bancroft and Sons, Co.); U. S. P. 2,622,955 (December 23, 1952).

A process for finishing cellulose and regenerated cellulose fabrics which are crease, spot, and soil resistant comprises impregnating the fabric with an acid catalyzable aldehyde type resin and carbazide hydrochloride as a catalyst wherein the fabric is heated to polymerize the resin.

SPECIAL FINISHING F

Finishing fabrics containing wool and man-made fibers

Whewell, C. S., Barrett, P., and Senior, J. *Textile Mfr. 78*, 419-420 (August, 1952).

This article is an account of experiments carried out to assess the changes in dimensions and appearance of several blended cloths of similar constructions following scouring, milling and raising. Types of scouring media, severity of milling, prevention of felting, and raising techniques are some of the topics covered.

Flame-proofing treatment for cellulose fiber materials

Anon. *Tex. Ind. and Fibres 13*, 323 (October, 1952); No. 10.

Article describes B. P. 671,669 of the American Cyanamid Co. for a flame-proofing treatment which is effective, but does not change the handle of the fabric.

Mills use colloidal silica to make better wool emulsions

Anon. *Textile World 103*, 119 (February, 1953).

Emulsions applied to wool or blends spun on

the modified or American system reduce fly, increase yield, reduce fiber breakage and control static. The Controlspray, made by Bachmann Uxbridge Worsted Corp., applies the emulsion before the coiler head on the first pin drafter. A clean, stable, emulsion is essential, and proper formulations of oil, colloidal silica, tint and penetrants will insure proper control and distribution, which in turn insure freedom from roll or faller laps.

Test procedures are diverse for vinyl-coated fabrics

Thomas J. Kerr. *Textile World 103*, 141, 276-284 (February, 1953).

More progress has been made in establishing methods for testing free vinyl film than for coated fabrics. Free film of this type, an entirely new material, required rapid development of specifications and tests. Some of the methods for testing self-supported films may be applied directly to vinyl coatings, and others are useful in making comparative evaluations of the coating compounds. The coating compounds themselves should be subjected to tests for specific gravity, hardness and volatility, and the coated fabrics should be evaluated for flammibility, crocking, bias strength, brittle temperature, abrasion, flexing, and folding.

TESTING AND MEASUREMENTS G

Instruments and Instrumentation G 2

An improved vibroscope

S. Leonard Dart and L. E. Peterson. *Textile Res. J. 22*, 819-22 (1952).

An improved model of the constant-frequency type vibroscope used for measuring single fiber denier is described in detail. This vibroscope has a least count of 0.01 denier, which corresponds roughly to about 0.03 mg. weight in a 1-in. sample. The improvements incorporated into this new model pertain primarily to its speed and ease of use. A description of the important parts is included, and some illustrative data are shown.

Analysis of urea-formaldehyde and melamine-formaldehyde resins on cellulose fibers

S. Kundig. *Textil-Rund. 7*, 451-464, 501-527 (1952); *Brit. Cotton Ind. Res. Assoc. 32*, 998 (December, 1952).

An approximation formula has been discovered for the determination of these resins on cellulosic fibers, the expression being based on the

nitrogen and formaldehyde determinations. Similarly an approximation method has been devised and tested. The method permits the estimation of synthetic resin present on finished, dyed or undyed fabrics, provided no other nitrogen-containing finish is present. Aqueous hydrolysis of melamine resin with water of pH. 6.6 at a temperature of 174 C. produced only traces of aliphatic amines and ammonium salts, thus indicating that the melamine molecule remains completely unchanged in the resin. Picrate derivatives confirm this.

Apparatus for testing fastness to light

Konrad Hoffman. *Melliand Textilber. 33,* 1040-43 (1952); *in German.*

This paper describes the design and the method of working of a new apparatus for testing the light-fastness of dyed goods by exposing them to artificial light. The latter consists of a mixture of electric bulb and Hg vapour lamp light. The results obtained with this apparatus conform with those obtained by exposing the dyed goods to daylight. For the sake of comparison, the intensity of natural light over prolonged periods of time have been evaluated.

Damping tests on tire cord

W. Miehlich. *Reyon Zellwolle Chemiefasern 30,* 412-17 (1952); *in German; Brit. Cotton Ind. Res. Assoc. 32,* 1005 (1952).

Apparatus and testing methods are described in detail. The test results show quite definitely that dynamic tests at high frequencies on tire-cords give very valuable information on tire-cord behavior in the tire. The investigations were carried out on viscose rayon and Perlon cords.

Detergency and foaming properties of the system alkylarylsulfonate soap-sodium carboxymethyl cellulose

Thos. H. Vaughn, H. R. Suter and M. G. Kramer. *Amer. Oil Chemists' Soc. 30,* 1-5 (1953).

A study has been made of the detergency and foaming characteristics of a ternary system comprising a sodium alkylarylsulfonate, a medium titer soap derived from tallow and coconut oil, and sodium carboxymethyl cellulose under average conditions prevailing in household laundering.

Determining length changes in textile fibers

Gunter Hummel. *Textile-Praxis 7,* 813-15 (1952); *in German.*

The fibers to be investigated are secured, without tension, at either end by means of polished

clamps to a glass plate. This plate fits in a diascope and the image of the fibers is projected on to a screen where the image is traced and measured. After the fibers, on the plate, have been treated in the particular medium the action of which on the fiber is being studied, the plate is replaced in the diascope and the images again measured. Details of the procedure are given.

Determination of the distribution of fiber lengths by measuring individual fibers

H. L. Roder. *Enka Breda Rayon Revue 6,* 102-8 (1952); *in Dutch.*

A detailed description is given of a method for determining the distribution of fiber lengths by measuring individual fibers. The auxiliary equipment specially developed for this method, and the evaluation of the results of the measurements are discussed elaborately.

Electrical resistance measurements

S. P. Hersh and D. J. Montgomery. *Textile Res. J. 22,* 805-18 (1952).

The resistance of single textile fibers and assemblies of those fibers has been studied because of its relation to the effects of static electricity in fibrous materials. An apparatus has been constructed to measure resistances of fibers and assemblies from 10 and 10 ohms at specified temperatures and relative humidities. Results of measurements at 30 C. on some natural fibers and on some man-made fibers are given for relative humidities from 52% to 85%. All of the materials measured were found to be ohnic and largely free from polarization effects at voltage gradients up to several hundred volts per centimeter, the limiting values used in the study. The resistivities of all material tested decreased rapidly with increasing moisture content of the material, the resistivity varying inversely as the 7th to 13 power of the moisture content.

Electrostatic charges measured instantly, directly

Anon. *Tex. World 103,* 150 (January, 1953).

The statigun, a new instrument that safely measures electrostatic charges on a dial calibrated from 0 to 2,000 volts per foot is not available. The instrument operates on the principle that a small voltage, proportional to that being measured, is induced by capacitive coupling onto the grid of an electrometer valve. Measurement is of voltage gradient, or volts per foot. The instrument's body and grip contain the batteries switches, adjusting rheostats and dial. The "Bar-

rel" contains the hermetically sealed valve, the capacitance coupling plate, a setting switch, and a sliding member that controls the sensitivity.

Fiber, yarn, fabric measured, counted or studied with projection type instrument

Anon. *Tex. Ind. 117,* 162 (January, 1953).

Yarn, fiber, or fabric samples can be blown up 3 to 20 times and projected on an 8-in. diameter graduated blass screen for count, measure, or observation with the "Projectina," a new instrument made in Switzerland and now available in this country. Finely spaced lines on the screen permit actual measurement of fibers or yarns in either fractions of an inch or millimeters. When the glass screen is replaced with an eyepiece, the samples are magnified 50, 100, and 400 times in three dimensions and in natural color.

Finish on cellulose fibers

C. H. Giles and E. Waters. *Textil Industrie 55,* 31-32, 35-40 (1953) ; *in German.*

This scheme deals with the qualitative analysis of fire- and mould-resisting finishings as well as of such means as may be used for sizing, wool oiling, water- and crease-proofing. Although these methods are only recommended for native and regenerated cellulose fibers, they may also be applied on other materials such as for instance acetate rayon, Polyamids, foils of artificial resins, paper, or in the substance.

Fluid treatment apparatus

Pyam L. Pendleton (Hampton Machine Co.) ; U. S. P. 2,624,189 (January 6, 1953).

Apparatus for the high pressure liquid treatment of a traveling strand comprises a trough adapted to contain treating liquid at atmospheric pressure, a manifold mounted therein, and conduits for supplying treating liquid under high pressure to the manifold.

Luster meter

H. W. Ellinger. *Melliand Textilber. 33,* 1043-44 (1952).

The "Pulfrich Photometer" for the determination of the luster character of wound rayon yarn samples and rayon products is described.

Measurement of the water repellancy of a fabric

Bernard Dupon. *L'Industrie Text.* 445-447 (August, 1952) ; *in French.*

The temperature at which hydraulic pressure tests are made on water-proofed fabrics to determine their water repellency is considered to be important. The author believe that the present test for Services materials should be modified either by stipulating the temperature at which the tests are to be made or by introducing a temperature correction factor. A Candian pressure chamber assembly in a constant temperature bath is illustrated.

Moisture measuring apparatus

John R. Spalding (E. I. duPont de Nemours and Co.) ; U. S. P. 2,621,233 (December 9, 1952).

Apparatus for determining the moisture content of material, such as cellophane, by measuring electrical resistance of the material at a plurality of locations comprises electrodes to be applied in paired relationship to different portions of the material.

Periodically recurring constant maximum load

W. Wegener. *Melliand Textilber 33,* 1038-40 (1952) ; *in German.*

The course of the total, permanent and elastic elongation of a viscose rayon subject to stress according to the principle of periodically recurring constant maximum load was measured and plotted. The behavior of viscose rayon when subjected to dynamic fatigue stress and to static fatigue stress is, in regard to the total elongation, qualitatively the same. Dynamic fatigue stress may be regarded as a border-line case of the dynamic fatigue test with disappearing load amplitude.

Quality control in textile production

Webster, A. *Textile Mfr. 78,* 425-429 (August, 1952).

Before a quality control organization can function effectively it should study the working conditions as one of the fundamentals of quality production. For example, it is futile to make extensive studies of warp-end breaks and to complain of bad yarn, etc., if the weave room conditions are variable and/or unsuitable. A discussion of static electricity, its effects and elimination is included in this article.

SRRL mechanizes the Fibrograph

Anon. *Textile World 103,* 107 (February, 1952).

A simple way to mechanize the Fibrograph, used to measure the length of cotton fibers, has been developed by John D. Tallant, physicist at the Dept. of Agriculture's Southern Regional Re-

search Laboratory, New Orleans, La. The basic measuring instrument is not modified. A small motor drives one handwheel, and a packaged feed-back control drives the other wheel. The component parts are commercially available, and no electronic work is required. The conversion cost is about $200 for parts and $50 for labor.

The curves obtained from the mechanized instrument are smoother than those generally obtained by hand operation and are interpreted in the conventional way. Output is increased 60% to 80% because the operator is free to prepare the next specimen while the Fibrogram is being drawn.

Stress relaxation of fibrous materials

E. T. Kubu. *Textile Res. J. 22,* 765-77 (1952).

A description of the apparatus used in the stress-relaxation experiments is presented. With this apparatus six stress-relaxation experiments on fibrous materials may be carried out simultaneously. The device utilizes ring-dynamometer strain gauges and linear variable differential transformers, whose outputs are fed into a multipoint recorder. The stability of the apparatus is discussed, and the calibration and experimental procedures are described.

The moisture regain of textile fibers

W. R. Moore. *Textile Recorder 70,* 66-8 (1953).

The moisture absorption characteristics of various textile fibers are discussed and a number of accepted methods for the determination of moisture regain described.

The wear of fabrics

Textilabor. *Textielwezen 8,* No. 9, 98-112; No. 10, 20-35; No. 11, 49-60 (1952); *in French.*

The construction and operation of two Belgian abrasion testers are described. The "Usometre" holds a circle of the cloth specimen at a predetermined tension and presses it against a fluted roller, which is in effect a rotary file, or against a roller covered either with emery cloth or another fabric. The applied pressure can be adjusted by means of a jockey weight on a beam. The fluted roller has the advantage over emery cloth in that the abrading characteristics are more constant. The second apparatus, the "Frictiometre" consists essentially of a motor driven fluted roller over which is suspended a strip of the material to be tested, a weight attached at the lower end of the strip supplying the tension. The cloth strip is of the standard dynamometer test form so that

a tensile test may be made after the abrasion test has been applied.

Thermosol method of dyeing

J. W. Gibson, Jr., Paul Knapp and R. J. Andres. *American Dyestuff Reporter 42,* 1-2 (January 5, 1953).

A description of the "Thermosol" method of dyeing, especially suitable for dyeing the new synthetic fibers, is given. The process consists of three main steps namely applying a surface coating of dye to the fiber; exposing the dried, dyed fibers to a high temperature (above 350 F.) for a short time; and scouring to remove excess dyeing assistants and surface colors which were not fixed during the heating.

Testing evenness in a running yarn

Heinrich Grunner. *Faserforsch u. Textiltech. 3,* No. 5, 182-84 (1952); *in German; Brit. Cotton Ind. Res. Assoc. 32,* 955 (December 15, 1952).

A new optical device for determining irregularity of yarns without incurring mechanical distortion of the yarn is described. It has a beam of light focused on an orifice through which the yarn passes along the optical axis. Any change in yarn diameter alters the amount of light passing through the orifice on to a photo-cell placed in a convenient position beyond it. By means of this method optical comparison is made not merely of the yarn diameter but of the cross-sectional area, the resulting values thus being independent of cross-sectional outline.

Viscosity of cellulose

P. H. Teunissen. *Enka Breda Rayon Revue 6,* 93-100 (1952); *in Dutch.*

A method is described for determining the viscosity of cellulose. The result, expressed in centipoises according to TAPPI is known in about 1 hour. The method is applicable to any form in which the cellulose occurs, e. g. cotton, linters, wood pulp, cellulose from alkali cellulose, woven and knitted fabrics made from rayon-fiber and cotton, etc. A micro-method yields—in about the same time—results with the aid of which the chemical attack of fabrics can be judged.

Wet fabric treatment

Wm. J. Kock (Colonial Prints Works, Inc.); U. S. P. 2,624,190 (January 6, 1953).

A liquid container is divided into two sections with a rotating fabric carrying drum mounted above each section wherein the fabric is folded

in long and short folds in the tub so that the first laid folds may be readily withdrawn regardless of the number of folds subsequently laid thereon.

Yarn counter

Anon. *Rayonne Fibres Synth. 8,* No. 9, 89 (1952); *in French; Brit. Cotton Ind. Res. Assoc. 32,* 955 (December 15, 1952).

The "Texti" yarn counter with its interchangeable objectives and movable micro scale is discussed and illustrated. It enables the composition of the yarn to be determined, and the cause of yarn or fabric faults to be known.

TEXTILE MILLS H

Check your heating system—it may need revamping

W. Sennhauser. *Tex. World 103,* 116-17, 246, 248 (January, 1953).

The heating systems of many mills are obselete. This article tells how to survey and modernize a heating plant. By doing this, many parts of the old system may be used, continuous uniform heat is assured, and savings are realized on fuel.

Electrical Equipment Conference

Staff. *Tex. Ind. 117,* 97-101, 124 (January, 1953).

Textile mill electrical engineers and maintenance men from the Piedmont-Carolinas section met in Raleigh, N. C., on November 6 and 7, for a Conference on Electrical Equipment for The Textile Industry. Papers presented before the group included: "Drive Requirements of Some Textile Machinery," by I. S. Bull, Jr.; "Operating Capabilities of A-C Motors," by F. D. Snyder; "Starting of Spinning and Roving Frames," by R. E. Parker; and "Electrical Problems and Their Remedies," by T. O. Sills.

Engineering—New ideas, new materials dominate mill engineering

James H. Kennedy. *Textile World 103,* 103-104 (February, 1953).

Plant engineers today are using new materials and new techniques to build and modernize the most efficient textile plants the world has ever known. The accent is still on flexibility, and the plant must be able to do a good job on today's fibers and blends and still be able to expand, rearrange, and reshuffle for tomorrow's fibers and blends. Discussed in this article are location, site and layout of plants, construction materials, conditioning, and light and power.

Freedom demands a solvent America

Harry F. Byrd. *Tex. Ind. 117,* 104-106 (January, 1953).

In this article the nation's long-time leading exponent of governmental economy points to the desperate need of cutting federal spending and balancing the budget. Facts and figures are given on the almost unbelievable rate of federal spending. Three alternatives facing the new administration are: (1) more taxes, (2) more deficit spending, (3) reduction in nonessential federal spending.

Fork trucks and tractors reduce handling time at Cone Mills

Anon. *Tex. World 103,* 139 (January, 1953).

Four tractors and four fork trucks at Cone Mill's Greensboro and Pineville, N. C., plants do all the general load handling. Most of the strenuous labor has been eliminated, and some of the warehouse areas have been tripled in capacity; other areas have been doubled. Handling costs havev been reduced to a fraction of a cent per ton.

General outlook—Relief with the Republicans is the keynote of 1953

P. M. Thomas. *Textile World 103,* 92-93 (February, 1953).

Article discusses probable political and economic trends in 1953, with an expectation of less government interference in business and a hope of a solution to the Korean problem. The minimum wage, mill productivity and use of synthetics are also discussed.

Good planning gives high steam-plant efficiency

E. Dalton White. *Tex. World 103,* 122-23 (January, 1953).

One mill obtains high steam plant efficiency by a preventive-maintenance program and careful control of steam consumption. Some of the procedures are: (1) Each of the two boilers is inspected, cleaned, and repaired after three months of operation, (2) Each boiler carries the full plant load for about six months of the year and acts as standby for the other six months, (3) Daily checks on chemical analysis, fuel consumption, and water evaporated are used to adjust boilers for maximum efficience, and (4) Plant heating can be controlled at valves in the boiler room or by thermostats in production areas.

How to make rating easier

J. E. Gardner. *Textile World 103*, 164, 192, 194 (February, 1953).

Employees should be rated in terms of job performance and not generalizations. The supervisor should not be forced to rely solely on his own judgment when he is rating employees but should have a sound system of rating to follow. Article points out ways in which rating can be made more effective and reliable.

How to take care of electric motors

J. L. Watts. *Textile World 103*, 126-27, 204, 206, 208, 210, 212 (February, 1953).

A motor that receives regular attention will always be in good mechanical condition. The five maintenance tips included in the article discuss: (1) guaging moving parts for wear, (2) refacing worn commutators, (3) reboring and bushing housings, (4) checking motors and windings for overheating, and (5) testing winding current for overloading.

How you can reduce seconds caused by Barre' cloth

Richard B. Pressley. *Tex. World 103*, 112-3, 216, 218 (January, 1953).

The let-off causes more barre cloth than any other loom motion. This is the result of basic knowledge of how to maintain and set the let-off assembly. A precision let-off on C & K looms will make barre-free cloth if: let-off is inspected and worn parts removed; grease is kept at the right level; driving mechanism is adjusted to close tolerances; and the warp tension is regulated daily.

Machinery developments—Major machine advancements hit the mills in 1952

Richard C. Scott. *Textile World 103*, 96-97 (February, 1953).

During 1952, the trend in textile manufacturing was to larger packages, improved quality controls, increased speeds, and more and more blending of fibers and manufacturing systems. Machinery manufacturers provided much heavy equipment and many precision instruments to help mills keep up with this trend.

Mill production—Upswing in June ended textile doldrums

McGraw Hill Dept. of Economics. *Textile World 103*, 93-95 (February, 1953).

Article states that on a full-year basis, 1952 was off 7% from 1951, but production in the second half of 1952 topped the corresponding period

for 1951. It is also predicted that 1953 output should be 2 to 3% higher than 1952. Figures and graphs are given to show basis of prediction, and statistics on cotton, wool and synthetics are included.

New Era dries more for less with a steam-circulating system

Anon. *Tex. World 103*, 107 (January, 1953).

Twelve steam-circulating systems replaced 12 bucket-type steam traps on a dryer at New Era Dyeing and Finishing Co. The air temperature is reported to have increased from 240 to 290 degrees F., and the steam pressure reduced from 125 to 90 p.s.i. The system accelerates the flow of steam and condensate in the steam spaces of the horizontal tubular heating surfaces, and by breaking up the film of condensate with turbulence created by the injector, the new system improves heat transfer.

No lint accumulation in new axial air gap motors

Anon. *Tex. Ind. 117*, 73 (January, 1953).

A complete line of axial air gap motors has been designed specifically for use in lint laden atmosphere encountered in the textile industry. The windings of these motors are filled and varnished, thus presenting a smooth, hard and glossy surface which will effectively prevent the retention and building up of lint. To further aid in keeping the ventilating passages clear, these motors are furnished with motor covers with larger-than-standard openings.

Personnel issues—Stability in 1953 may bring solutions to major problems

Macon P. Miller. *Textile World 103*, 104-105 (February, 1953).

Two major problems confronting the textile industry are: (1) to develop managers who can meet the broad social responsibilities of the industry, and (2) to develop employees who will "belong" to the organization as participating members. A discussion of these problems is given, and the belief expressed that the industry will make progress toward solutions to them in 1953.

Purchases—Mills again buy heavy in equipment and supplies

P. M. Thomas. *Textile World 103*, 95-96 (February, 1953).

Mill purchases for 1952 were off only slightly from 1951's all-time high, and knitting machinery led with a 24% increase, but manufacturers look for a new high in 1953. Highest gains are ex-

pected in auxiliary equipment and second highest in spinning and weaving machinery. However, if mill costs continue to rise and consumer spending drops off, there will be less money to spend and capital expenditures will fall off.

Report on New England's textile industry

Anon. *Tex. Ind. 117*, 77 (January, 1953).

On November 20, 1951, the Conference of New England Governors appointed a committee to study the New England textile industry. Exactly a year later the committee formally presented its Report on the New England Textile Industry to the Governors' Conference.

The report severely criticized the people and policies of New England, its textile management for short-sightedness, cites factors leading to New England's dilemma, recommends Federal legislation on a national basis for the textile industry in one section of the report but the placement of government contracts on a regional basis in another; calls for the New England public to have better textile relations, suggests southern acceptance of unionism as a vital necessary force, and contains the analogy that New England virtues in the 1920s and '30s compared with those of the extinct dinosaurs: "Eat it up, wear it out, make it do, go without."

The report ends with the recommendation that instead of recalling past glories, castigating past failures, and embracing future catastrophy, New England must devote the energy and invention which have always been her greatest resource to meeting this challenge of the present.

A condensation of the report, prepared by New Englanders, one of whom is a textile manufacturer and another a former woolen manufacturer, is presented without editorial comment.

Some notes on steam economy and operating efficiency—IV

Slade, F. H. *Textile Manufacturer 78*, 398-400, 414 (August, 1952).

Continuing the observations regarding steam economy, this article is concerned with bucket type traps (open and inverted types), thermostatic traps, air vents and the causes of refractory decay.

Synchronous motors can improve your plant power factor

J. C. Moore. *Tex. World 103*, 131, 208, 210 (January, 1953).

Induction motors of 75 h.p. and over—such as air compressor motors—demand excessive magnetizing current at part loads, and this demand causes a poor power factor. Synchronous motors can improve power factor because: (1) they need no magnetizing current at full loads, (2) they generate current at part loads, and (3) stabilize power-system voltage. Article describes the applications of synchronous motors and shows their advantages over induction motors.

Textile applications for television equipment

Anon. *Tex. Ind. 117*, 154-55, (January, 1953).

R. C. A. Industrial television provides a means of remote viewing of scenes or operations too dangerous, inconvenient or inaccessible for direct observation. Textile industry applications include: inspection of slashing, continuous dyeing and finishing ranges; time study; oven and furnace operation; plant intercommunication; training; and materials handling control. Equipment consists of a small, lightweight camera and viewing monitor with a single cable connection.

Textile odors and deodorants

Northern New England Sect., A. A. T. C. C. *Tex. Ind. 117*, 114-115 (January, 1953).

Objectionable odors may be eliminated by either masking or absorption. Masking is not effective in all instances, and offensive odor can sometimes be detected through the mask. True deodorizing can be effected by absorption by activated carbon and by chemical controls, such as neutralization of acids, condensation of amines, and combining of sulfides.

The house in order

Ringgold Arden. *Tex. Ind. 117*, 127, 129, 131 (January, 1952).

The idea that the United States economy is mature is retrogressive, and it is hoped that the new administration will repudiate it. Twenty years ago, the only synthetic was rayon, now there are many synthetics being manufactured and more being developed. The Textile Industry is number one in employment, number two in value of goods, and is one of the largest tax producers; yet has had less government consideration than most other industries. The hope of the textile industry is that there will be a new governmental climate, more conducive to the production of new ideas and new goods than the old one which fostered division rather than multiplication.

White Horse Mill—the South's newest cotton mill

James H. Kennedy. *Textile World 103,* 113-117 (February, 1953).

One of the two bale-to-fabric cotton mills erected in the South in the past 25 years, White Horse Mill, designed by the staff of Maverick Mills, East Boston, Mass., is an example where latest trends and independent thinking were incorporated. Some of the outstanding features of the mill are: a full basement, all new machinery, an unusual receiving and shipping setup, a one-man waste baling system, special safety measures, and scheduled smoking periods. Article gives a description of mill, and is fully illustrated.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Determination of the crystalline portion of cellulose

K. Schwertassek. *Faserforsch u. Textiltech. 3,* No. 7, 251-257 (1952); *in German; Brit. Cotton Ind. Res. Assoc. 32,* 965.

It is shown how, by means of an iodine adsorption diagram, the crystalline component of a cellulosic material can be determined. The difference in behaviour of starch and cellulose during adsorption investigations with different iodine concentrations may possibly be explained by considering that, in the case of starch, a portion of the adsorbed iodine molecules is held fast by secondary valencies acting simultaneously from several directions. This would explain the greater iodine adsorption power of starch from dilute solutions and the reverse behavior at higher iodine concentrations.

Iodine adsorption and crystallinity of cellulose fibers

K. Schwertassek. *Faserforsch u. Textiltech. 3,* 87-88 (1952); *in German; Brit. Cotton Ind. Res. Assoc. 32,* 950 (1952).

In this method, fibers are soaked in iodine solution prepared by dissolving iodine in a solution of potassium iodide in water, and then rinsed in a saturated solution of sodium sulphate which removes all the iodine except that held by adsorption; the iodine in solution is determined by titration with N/50 thiosulphate solution, the fibers are pressed into a cake or pellet in such a way that transfer to the graduate flask can be carried out without the use of a funnel. The iodine adsorption number is calculated which gives an indication of the degree of crystallinity of hydrated cellulose fibers and of mercerization.

Light absorption of cellulose derivatives

E. Treiber and W. Land. *Melliand Textilber. 33,* 1021-24 (1952); *in German.*

With acetyl cellulose and nitrocellulose, a selective absorption can be observed practically only in the range of consumptive absorption of acetic acid esters and nitric acid esters. Above 3000 Å or 3700 Å, pure cellulose acetates and nitrates show only an apparent absorption, caused by Tyndall diffusion of macromolecular substances. The author points out in detail the possibilities of reaching false conclusions in regard to the absorption behaviour when there is no consumptive absorption.

Notes on mildew and micro-organisms in textiles

Technical Correspondent. *Textile Mfr. 78,* 422-424 (August, 1952).

Article is a survey of mildews and micro-organisms which attack textile material, and is concerned mainly with mildews and moulds which may be subdivided into five groups: (1) Aspergilli, (2) Penicillia, (3) Mucors, (4) Fusarium, and (5) Ptichoderma. The causes, effects, protection, and tests for presence are discussed.

Sorption by textile fibers

A. S. Weatherburg and C. H. Bayley. *Textile Res. J. 22,* 797-804 (1952).

Data are given relating to the sorption of a variety of surface-active compounds from aqueous solution by cotton, viscose rayon, acetate rayon, nylon, and wool fibers. In general, cationic compounds were found to be sorbed to the greatest extent and nonionic compounds the least, the anionic compounds occupying an intermediate position. Sorption is attributed primarily to the hydrophilic-hydrophobic nature of the surface-active molecules or ions, micelles taking little part in the sorption process, although there is some evidence that positively charged micelles of cationic compounds are sorbed to a slight extent. The degree of sorption may also be influenced by superimposed effects of electrostatic interaction, electro-phoretic charges, and the presence of chemically reactive groups in the fibers. Wide variations were found in the sorption capacities of the different fibers, and the arrangement of the fibers in order of increasing sorption varied with each type of surface-active compound studied.

Spectrophotometric determination, acute toxicity and mechanism of action of acrylonitrile

H. Brieger, F. Rieders and W. A. Hodes. *Arch*

Inc. Hyg. Occup. Med. 6, 128-40 (1952); *Brit. Cotton Ind. Res. Assoc. 32,* 914 (November, 1952).

A new, simple and accurate spectrophotometric method for determining acrylonitrile in air and body fluids is presented. By means of this method the air concentrations of acrylonitrile in an exposure chamber were exactly determined and maintained. Rats, dogs, and rhesus monkeys were exposed for seven hours to concentrations of 100, 75, 50, or 25 parts per million. Death was due to respiratory paralysis. Cyanide and cyanmethemoglobin were found in the blood, proving that the toxic action of acrylonitrile is based on the formation of cyanide in the body.

Studies on the partial carboxy-methylation of cotton

George C. Daul, Robert M. Reinhardt and J. David Reid. *Textile Res. J. 22,* 787-92 (1952).

Pilot-scale carboxymethylation of cloth was conducted which showed that it is possible to use standard textile machinery in the process. The cloth resulting from this treatment had a crisp hand with a slightly starched feel. More detailed investigations than reported previously were made, and it was found that the tensile strength and elongation of treated cotton are increased, dyeing properties are changed, and soiling-resistance and soil removal are increased. It was also learned that the treated materials are unaffected after one year's storage.

Yarn conditioning

Virginia C. Ester (Eastman Kodak Co.); U. S. P. 2,622,045 (December 16, 1952).

A process of conditioning cellulose acetate yarns comprises applying to the yarns a lubricating composition containing a substituted 2-oxazoline.

TEXTILE EDUCATION AND RESEARCH J

New techniques revealed at TRI annual meeting

Anon. *Textile World 103,* 122-124 (February, 1953).

Two-day session at Hotel Commodore in New York brings 400 leading textile scientists together to review past year's work and to consider future developments. Included in article are highlights from three of the seven technical papers delivered. The titles of the papers are: Clothing Comfort Can Now Be Measured, by Orville C. Wetmore;

Crease Resistance Depends on Yarn Structure, by Reiner G. Stoll; and New French Rayon Has Improved Properties, by Nicholas B. Drisch and Leonard Soep.

Research—Industry doubles expenditures for research in six years

William A. Newell. *Textile World 103,* 102-103, 324, 326, 328 (February, 1953).

The textile industry is becoming increasingly aware of the value of research, both fundamental and applied. Expenditures for textile research during 1952 are estimated at $30,000,000, and a summary of research activities shows that a wide range of problems are under study. Article discusses some of the projects under way at Textile Research Institute, North Carolina State College, and other textile research organizations.

Identification of synthetic fibers

G. L. Royer. *AATT 8,* 32-40 (December, 1952).

Methods of identifying synthetic fibers by microscopical and dye staining techniques are described. A chart is presented listing the various fibers and the colors which were obtained when a number of identification stains, which have been developed by dye manufacturers, were applied by the recommended procedure. Also presented are cross-sections of various synthetic fibers.

Twisting device

Norman E. Klein (Deering Milliken Research Trust); U. S. P. 2,625,786 (January 20, 1952).

A yarn twister comprises a rotating spindle provided with an orifice for yarn withdrawal therethrough and a yarn tail deflecting means positioned to be engaged, after breaking of the yarn, by the tail of the yarn issuing from the spindle orifice.

Rubber-bonding of high tenacity fibers

A. H. Gentle and T. Jackson (British Celanese Ltd.); B. P. 680,447 (October 1, 1952).

The rubber-bonding properties of high-tenacity fibers are greatly improved by dipping the yarn in a resin before applying the rubber. The resin is made by heating formaldehyde or paraformaldehyde with resorcinal or phenol in molar proportions ranging from 6:1 to 1:1 under acid or neutral conditions.

The sizing of rayons with linseed oil

C. Pinte, E. and P. Rochas. *Bull. Inst. Textile de Fr. No. 34,* 15-51; *No. 35,* 25-49 (1952), *in*

French; *Brit Cotton Ind. Res. Assoc. 33,* 56 (January 31, 1953).

A study of the conditions of sizing rayon with solutions of linseed oil, and of degradation of the rayon is reported. It is shown that: Dull-finish rayons are more easily deteriorated than bright rayons. The deterioration of rayons increases in presence of residual spinning sulphur. Losses of mechanical properties and reduction of degree of polymerization of rayon due to sizing increase in proportion to spinning stretch. The higher the initial degree of polymerization of the rayon, the greater the decrease due to sizing. The post-spinning stretching of rayons substantially increases their sensitivity to sizing, and the stretching to which sized yarns are subjected increases the deterioration that occurs during storage.

Corrugated fibrous webs as insulation fillers

E. R. Frederick. *Textile Res. J. 23,* 45-53 (1953).

A fiber web-forming technique is described by which any fiber mass may be converted into a geometric form which provides high compressional resistance and good over-all insulation properties. Abrasion properties are not adversely affected, and thermal conductivity characteristics may actually be improved by this fiber orientation process. The corrugating operation should not be difficult to adapt to commercial practice Potentially, the process offers a means of producing improved insulation fillers in quantity and on conventional equipment with relatively minor modifications and/or attachments.

Non-woven rayon fabric

Alvin W. Boese (Minnesota Mining and Mfr. Co.); U. S. P. 2, 626, 883 (January 27, 1953).

A non-woven rayon fabric consists of a web of staple rayon fibers and plasticized staple acetate fibers and a layer of non-plasticized continuous acetate filaments laminated to the web, the composite fabric being impregnated by water resistant sizing.

Surfaced fabric

Robert J. Nebesar (Universal Moulded Corp.) U. S. P. 2,625,499 (January 13, 1953).

A fabric consists of interwoven yarns having interstices therebetween with a resin covering the face of the fabric and penetrating the interstices and a resin penetrating the yarns and interstices whereby lateral slippage and separation of the surfacing resin is resisted.

Dyeing assistant

Ed. Lohan. *Daily News Record* p. 36, (February 15, 1953).

A new dyeing assistant, Dynade V, has been developed by the Amalgamated Chemical Corp. The assistant is said to bar spots and tarry deposits which frequently occur during the dyeing of Dacron and Orlon or blends of these fibers with other fibers such as wool, acetate or viscose. Dynade V is a solution of sodium salt combined with suitable surface active agents and assumes complete dye solubility.

Silicon-containing azo dyes

S. V. Sunthankar and Henry Gilman. *Textile Research J. 23,* 53-8 (1953).

The dyes derived from m-triphenylsilyl-N, N-bis (B-hydroxyethyl) aniline have been found to lack substantivity for cellulose acetate and to have inferior lightfastness, whereas the dyes obtained from the tri-methylsilyl analogue showed fairly good substantivity and very good lightfastness. A comparison of the dyeings and the lightfastness of some of the dyes synthesized from m-trimethylsilyl-N, N-bis (B -hydroxyethyl)- aniline with those of the corresponding dyes obtained from the methyl analogue, which are commercial dyes, has revealed that the substantivity of the silicon-containing azo dyes is less, but the lightfastness is more, than those of the commercial azo dyes. The reflectance spectra of the 1% shades of some of the azo dyes have been recorded, and the Munsell renotations for hue, lightness, and chroma of the color of the dyes have been determined.

Synthesis of water-repellent dyes

C. C. deWitt and P. D. Shoff. *Ind. and Eng. Chem. 45,* 302-7 (1953).

A systematic study involving normal long-chain alkyl-substituted dyes showed that the water repellence of these dyes on cotton and wool yarns increases in almost direct proportion to the length of the normal alkyl chain and to the number of such alkyl groups in the dye molecule. Dyed cotton yarn can be made twelve times as water-repellent as the original fiber. Even dyes which have several hydroxyl groups showed marked water repellence when the long-chain normal alkyl group is substituted in the nucleus of the dye molecule. Octyl rosaniline on wool yarn develops a remarkable degree of water repellence.

Yarn cake dyeing

Michael W. Heno and Jas. E. Dougherty, U. S. P. 2,625,810 (January 20, 1953).

A holder for supporting a yarn package to be dyed comprises a perforated cylindrical post for holding the packages wherein package separating discord elements lock into a longitudinal groove in the outer surface of the post.

Anti-static agent

Jos. J. Carnes, U. S. P. 2,626,876, -7 (January 27, 1953).

Treatment of vinyl resin articles with a quaternary ammonium compound as an anti-static agent.

Crease-proofing

E. Elod and W. Graeser. *Reyon Zellwolle Chemiefasern 30,* 515-25 (1952), *in German; Brit. Cotton Ind. Res. Assoc. 33,* 66 (January 31, 1953).

The degree of condensation of aminoplasts used for imparting crease-resistance to fabrics can be determined by dyeing the material with Crystal Ponceau 6R extra. Comparison is made with an empirically derived color scale. The homogeneity of distribution of the resin over the fabric can readily be observed and the method provides a good means of quality control. Since different types of aminoplasts vary in resistance to the acid hydrolysis accompanying the dyeing process, the most favorable dyeing conditions (pH, temperature and time) must be determined in preliminary tests. Since the detection of variation in shade when test dyeing with Crystal Ponceau 6R extra is best carried out on white or very pale shades, a white material usually accompanies a dyed material during the impregnation process so that a check can be made by testing the white material. However, tests made on dyed materials shows that the use of fluorescent dyes has great possibilities.

Heat-setting synthetic fibers

F. Fourne. *Textil-Praxis 7, Brit. Cotton Ind. Res. Assoc. 33,* 67 (January 31, 1953).

The author describes how the high temperature fixing of synthetic fibers with steam not only improves their crease-resistance but also gives dimensional stability and firmness to knitted and woven fabrics. Various methods of heat-setting are described, together with some details of optimum operation of the machines. The fibers discussed include nylon, Perlon, Orlon and Terylene; some data concerning the changes in crease resistance, etc., are given.

Relationship between structure and creasing properties of viscose rayon II

E. Elod and M. Kramer. *Textil-Praxis 7,* 623-25 (1952, *in German; Brit. Cotton Ind. Res. Assoc. 33,* 66 (1952).

Untreated skin-covered fibers, produced under suitable spinning conditions, have a better crease-resistance than skinless resin treated fibers. Skin-covered fibers having other superior mechanical properties. The loss of crease-resistance on heating by rayon not treated with resin has also been investigated.

Textralizing

Anon. *Textile Industries 117,* 143, 145, 147 (1953).

Filament yarns have been made to behave like spun yarns by the textralizing process. The principle involves the use of the stuffer crimper in conjunction with setting agents. Continuous filament is fed into a restricted chamber at controlled back pressure. The yarn is crimped between the nip of the feed rolls and the previously stuffed yarn, setting up a column action in a very short element of the filament. As it buckles, electrically applied heat permanently sets the thermoplastic fibers in this contorted shape.

Inter-fiber friction

J. C. Guthrie and P. H. Oliver. *J. Textile Inst. 43,* T579-95 (1952).

Inter-fiber friction measurements have been made on viscose rayon fibers using a stick-slip technique. The effect of tension in the fibers is examined and the effects of denier and angle of contact between the fibers are small. A curve has been fitted to the experimental values of frictional force and normal force. The effects of titanium dioxide as delustrant, colored pigments incorporated before extrusion, two dyes in heavy shades, and two finishes are investigated. Further work is necessary on the values of kinetic friction forces during the "slip" period.

Measurement of twist by means of the false untwist Torsiometer

A. Magni. *L'Industrie Text.* 479-82 (September, 1952), *in French; Brit Cotton Ind. Res. Assoc. 33,* 21 (1953).

A torsiometer is described which can determine the number of twists inserted in any given length of singles or doubled yarn by means of a continuously acting untwisting and retwisting device. The machine consists essentially of a pair of feed rollers closely followed by a pair of idler

nip rollers which in turn are succeeded by the advancing rollers. Two meters record the total length of yarn passed through the train of rollers and the number of twists inserted in this length.

Measuring static charge on fabrics

J. M. Carroll. *Electronics 25*, 206, 210, 214 (1952); *Brit. Cotton Ind. Res. Assoc. 33*, 78 (January 31, 1953).

Circuit details are given of an instrument for making quantitative measurements. A floating-grid amplifier picks up the static charge and an indication of total charge and rate of decay is furnished by a diode meter.

Moisture measuring

John R. Spalding (E. I. duPont de Nemours and Co.); U. S. P. 2,621,232 (January 13, 1953).

Apparatus for determining the moisture content of material, such as baled staple fiber and beamed yarn, by measuring electrical resistance of the material at a plurality of locations comprises electrodes to be applied in paired relationship to different portions of the material.

Physical properties of continuous filament and short fiber yarns

E. Viviani. *Rayonne Fibres Synth. 8*, No. 11, 15-30 (1952), *in French; Brit. Cotton Ind. Res. Assoc. 33*, 76 (January 31, 1953).

The physical properties (breaking strength), dynamometric diagrams, elastic properties, apparent specific weight, thermal conductivity, optical properties and count regularity of continuous filament and staple yarns made of the same rayon material are compared and a detailed analysis is made of the cause of the differences found. The addition of cotton to rayon staple decreases the dry strength and increases the wet strength of the resulting yarn.

Static electrification phenomena of textile yarns

V. E. Gonsalves and B. J. van Dongeren. *Enka Breda Rayon Rev. 6*, 253-65 (December, 1952), *in Dutch.*

In this article a description is given of an electronic measuring method, with the aid of which the electrostatic charge of textile yarns can be measured accurately. A new typical measuring method, with the aid of which the electrostatic charge of textile yarns can be measured accurately. A few typical measuring results are given and subjected to further discussion.

Static electricity

G. Morris and A. N. D. Young. *Nature 171*, 220-21 (January 31, 1953).

A method for determining the electrical resistance of fiber bundles is given. The method enables resistance measurements to be made up to the order of 10^{17} ohms. Some typical curves are presented which connect moisture regain and electrical resistance.

Yarn frictional drag tester

U. S. P. 2, 625,040 (January 13, 1953).

Apparatus and process for testing yarn comprises pressing opposed circular and straight longitudinal surfaces against opposite sides of the traveling yarn under measured loads and then increasing the load against the yarn until it breaks.

Determination of the heterocapillarity of closely woven fabrics

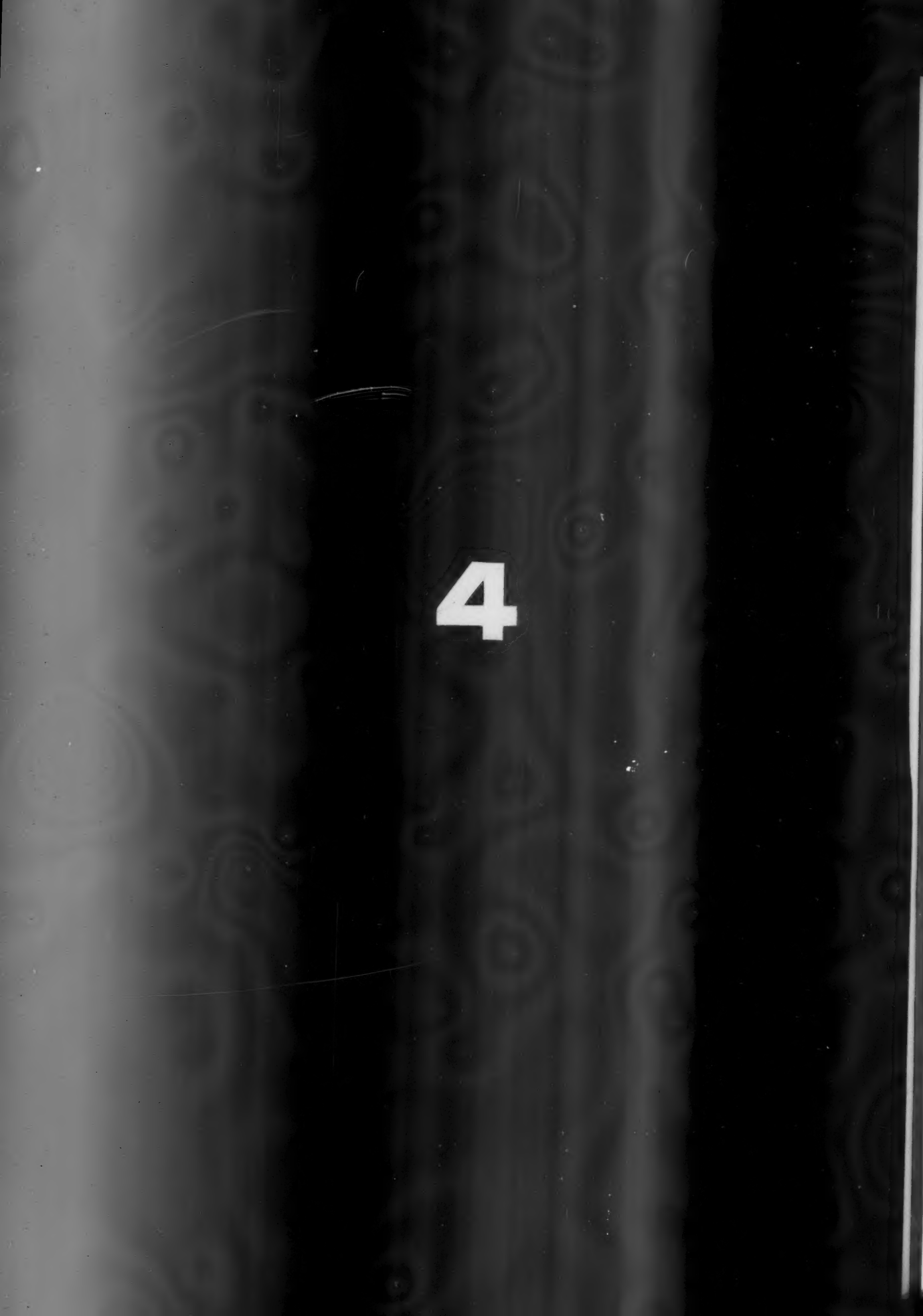
S. S. Voyutsky and L. E. Peregudova. *J. of Applied Chemistry of the U.S.S.R. 24*, 1117-22 (September, 1951; *in English.*

A comparatively simple method for determining the heterocapillarity of blanket material is worked out. Using this method, curves for the distribution of pore diameter as a function of number of pores obtained for unbleached and for scoured unshrunk four-layer blanket material, and for unbleached two-layer material. In all these forms of the material, the maximum on the distribution curve occurs at 10-30μ. There are many larger capillaries but very few with a diameter less than 10μ. Scouring the fabric decreases the number and total cross sectional area of the large capillaries but increases the number of capillaries of small diameter.

Equilibrium thermal comfort of fabrics

H. B. Hardy, Jr., J. W. Ballou, and O. C. Wetmore. *Textile Res. J. 23*, 1-10 (1953).

The effect of clothing on thermal comfort depends mainly on three factors: the physical properties of the fabric, the air spaces between the body and the fabric, or between the fabrics themselves, and the characteristics of the environment, such as its effective radiative temperature and the temperature, velocity and relative humidity of the air. The step-by-step solution of a typical problem concerning the relative comfort ratings of several fabrics if presented as an example of the method.


4

Textile Reader's Digest

Textile Highlights of the Month

RESEARCH LEADING TO EXPANSION

Research in the cotton textile and synthetic fiber fields today is resulting in importantly new markets both inside and outside the region and laying the groundwork for thousands of additional jobs.

Millions of dollars have been invested in new and expanded research facilities since World War II.

Plant rehabilitation, installation of new machinery and adoption of the latest scientific methods are listed as major reasons why the textile industry is looking Southward today as never before.

Capital commitments and expenditures, covering renovation, modernization and expansion, for cotton and rayon mills in 1951 are estimated at approximately $470 million, the bulk of it in the South.

Textile research has had an especially notable impact in creating new and expanded markets and opening up new jobs in Alabama, Georgia, Tennessee and the Carolinas.

Laboratories in these States today are concerning themselves with virtually the entire scope of textile manufacturing activities. Numerous new independent laboratories have been established in these States in the last few years, mills have expanded their own facilities or established new ones and educational institutions and Government agencies have stepped up sharply their textile research programs.

There have been striking developments, too, in the field of the synthetic fiber industry in the South—once feared as a damaging competitor of the region's important cotton textile industry but being viewed increasingly today as an ally in extending cotton's uses and markets.

Dr. Frank J. Soday, research director of the Chemstrand Corp., at Decatur, Ala., reports that more than half of the chemical industry's initial plant expansion in 1951—amounting to $600 million and covered by Government certificates of necessity—will be located in the South. Total capital expenditures for the chemical industry in 1951 are estimated at more than $4 billion with the South obtaining a large share.

The continuing movement of the synthetic fiber industry into this region will, Dr Soday says, "materially broaden the base of chemical manufacturing in the South" and create new markets for every basic chemical.

Today about 70 per cent of rayon production capacity is in the South, notably in Virginia, Tennessee, Georgia and the Carolinas.

These three industries—cotton textiles, synthetics and chemicals—can work together to improve the position of each.

In Decatur, Chemstrand is investing more than $50 million in a plant to manufacture a new product which was developed from research—and the corporation will employ in that Alabama city more persons in its research department than in production.

It is possible to give no more than a brief indication of how the research arms of various industries and of other organizations and institutions are working to provide tremendous benefits to the entire textile industry in this region.

The Institute of Textile Technology in Charlottesville, Va., has handled more than 300 projects for the textile industry during the year.

Studies have been made on both natural and synthetic fibers at Clemson College in South Carolina. The Industrial Research Institute at the University of Chattanooga does work on cotton textiles, and the University of Tennessee at Knoxville has a Fiber Research Laboratory.

Typical of the textile plants which have outstanding research facilities in Alabama is the West Point Mfg. Co., which has established a new laboratory in Shawmut, Ala.

Some of the outstanding textile research jobs in Georgia are being done at the research division of Callaway Mills at LaGrange; the research department of the Celanese Corp. of America at Rome, and the Central Development Department of the Textile Division of U. S. Rubber Co. at Hogansville.

Many South Carolina mills maintain fine research facilities, a few of them being the Graniteville Co. in Graniteville, Pacific Mills at Lyman, Deering Milliken at Pendleton and U. S. Rubber Co.'s Textile Division at Winnsboro.

In North Carolina, extensive research is carried out by Kendall Mills at Paw Creek, Burlington Mills Corp. at Greensboro, Mooresville.

In Tennessee, research programs are carried on at Dixie Mercerizing Co. in Chattanooga, American Bemberg Mills, Inc., at Elizabethton, North American Rayon Corp. at Elizabethton and E. I. duPont de Nemours & Co., Inc., at Old

Hickory, among others. (*Journal of Commerce*, May 19, 1952.)

"Z" TWIST TO "S" TWIST

Many mills, and particularly under the conditions in the industry at the present time, find it necessary at times to change the direction of twist in their yarn in order to meet construction specifications. Unless the spinning frames are equipped with reversible tape tension the reverse of twist requires changing over the tapes and, in some cases, moving the tape tension pulleys. Many mills and many fixers have developed their own methods of making this change. In developing the Saco-Lowell waltney Spinning Frame, a new type of anti-friction tape tension pulley was designed which offers several advantages both in the operation of the frame and in the changes required if twist direction is reversed. The main feature, insofar as twist reversal is concerned, is that the tape tension pulleys do not have to be changed from one side of the frame to the other.

On a conventional frame it should be remembered that the tape tension pulleys should always be on the slack side of the tapes. That is, when the cylinder is rotating counter-clockwise, the pulleys should be on the right-hand side of the frame, facing the head end. When the cylinders are rotating clockwise, the pulleys should be on the left-hand side of the frame.

To change from Z twist to S twist on frames with the cylinders running counter-clockwise, the ring rail should be run to the top of the spindles and the tapes slipped off of the tension pulleys. The tapes may then be slid over the tops of the spindles and changed to conform with the direction. After changing over the tapes, they may be again placed over the tension pulleys and the pulleys adjusted so that the tapes will ride on the pulley crowns.

To change from Z twist to S twist on frames with the cylinders running clockwise, the same procedure should be followed. However, it should be remembered that in this position the tape tension pulleys are on the left-hand side of the frame.

This automatic adjustment is secured by making the pivot bracket with a step on each of the two faces which will contact the flat on the hanger rod. In making the change from a right-hand to a left-hand spindle drive, after the pivot has been properly located, the only manual adjustment required is obtained by sliding the pivot bracket along the hanger rod until the tape runs in the center of the pulley face. This is the only adjustment needed to make the tape track properly. With the older construction, making a change of this kind involved adjustments in both the horizontal and vertical angles as well as the position of the bracket on the hanger rod.

Another interesting feature of design is the fulcrum pin, about which the pulley arm swings. This fulcrum pin is always parallel to the axis of the pulley, a condition which causes the pulley to "swing in its own plane." The importance of the detail lies in the fact that the tape will always have an inherent tendency to run in the middle of the pulley; whereas other pulleys which do not swing in the plane of their suspension, develop a tendency for a long tape to run to one side or the other of the pulley after it has been adjusted for a short tape.

One of the greatest advantages of the tape tension pulley is the ease in which twist changes may be made and the ease in adjusting the tape to track properly on the tension pulley. The pipe on the pivot bracket is designed so that, when it is placed on the hanger rod, it will be brought into line.

If we were to reverse the direction of the twist by changing the rotation of the cylinder from counter-clockwise to clockwise or vice versa, the tape tension rods and tension rods and tension pulleys would have to be removed from one side of the frame and reinstalled on the other. The jack gear in the head end would then have to be reversed in position to obtain the proper rotation of the front rolls. If the frame is equipped with an independent twist drive, a small intermediate gear would have to be shifted to the other side of the frame to make the front rolls rotate in the proper direction on both sides of the frame. This also necessitates interchanging the big intermediate gear in the head end. After changing over the tape tension rod and tension pulleys and changing the gearing in the head end, the tension pulleys would still have to be adjusted to keep the tape on top of the pulley crown.

Generally, the tapes are cut at the positions on the frame where the thread board lifter rods are located. While this is the usual procedure, it is not necessary to cut the tapes. Instead of cutting, the tape may be changed over by crossing it over the top of the lifter rods and under the bottom thread board lifter bracket. To cross the tape over the top of the lifter rods the two screws holding the ring rail to the ring-rail bracket are removed so that the rails may be lifted free of the bracket and the tape passed over the top of the lifting rod. The bottom thread board bucket should then be removed and the tape passed under the rod. It is not necessary to cut any tapes when using this method.

When the SG-1 frame was developed, a new tape tension pulley assembly was designed incorporating the features of the tension pulley described above which was developed for our conventional type frame. The pulley assembly was engineered so that quick adjustment was all that would be needed if the twist direction was changed. To change over from Z to S twist, the ring rail is run up to the top of the spindles and the tapes slipped off all of the tape tension pulleys. The tape tension pulleys are slid along the tape tension rods and changed over to conform to the new tape direction. One pulley should be adjusted at a time, relocating the pressure applied by the internal spring and plunger. This is done by placing the tip of a screwdriver blade against the plunger and pushing the plunger to the other side of the bracket. The $\frac{3}{8}$" x $\frac{7}{8}$" Allen setscrew in the bracket must be removed and reinserted in the other hole of the bracket. This set-screw tightens the tape tension pulley bracket to the tape tightener rod.

The pulley assembly may then be reassembled on the tape tightener rod, making sure that the pulley is correctly lined up to allow the tape to run in the center of the pulley. The bracket is shaped so that it will automatically assume the proper angle to maintain the tape in a running position on the crown of the pulley, after the pulley is correctly lined up with the spindles. This operation should be repeated for each pulley down the length of the frame.

The rotation of the cylinder is never reversed on the Saco-Lowell Gwaltney frame and always retains its counter-clockwise rotation. Therefore, the tape tension pulleys will always be located on the right-hand side of the frame, facing the head end. When reversing twist on this frame, it should be remembered that the control rings, both top and bottom, must be changed so that the opening in the rings is in the proper direction for easy piecing up.

After changing over the tapes, there will be a small amount of twist in the tape. For this reason, it is recommended that the tapes on this frame be cut off and replaced by a new tape, if the direction of twist is to be reversed for a considerable length of time and especially if the tape is old or worn. Anon. *Textile Age 17*, 42-43 (February, 1953).

DEVELOPMENTS IN COTTON BLEACHING (BRITISH VIEWPOINT)

In a recent paper to the Midlands Section of the Society of Dyers and Colourists at Nottingham, Dr. A. E. Stubbs (Bleachers' Association Ltd.) discussed recent theoretical advances, which permitted a deeper understanding of the action of kiering and of other processes in conferring absorbency on the cotton fiber. The removal of cotton wax could no longer be regarded as the principal factor determining the conferment of absorbency; in fact it was possible, without using surface-active agents, to produce highly absorbent material that still retained practically the whole of the cotton wax, whereas, on the other hand, raw cotton that had been dewaxed by prolonged extraction with boiling organic solvents remained substantially non-absorbent. Experiments showed that absorbency properties appeared in assemblies of cotton fibers when the fiber surfaces had been subjected to light abrasive treatment, suggesting that the conferment of absorbency may be associated with damage to the primary wall of the fiber. Electron-microscopical work on kiered cotton indicated that extensive damage did in fact occur during the boiling process.

When continuous processing was contemplated, methods must be devised whereby absorbency could be attained in a relatively short time. This object could be achieved in various ways. Thus, treatments with caustic soda and alkaline hydrogen peroxide may be employed, the rate of attack being accelerated by the use of high concentrations, which were made possible economically by adopting a liquor ration of 1:1 (pad-stream) in place of the 4:1 or greater used in kiers. This was the basis of the American continuous methods. Again, the efficiency of the normal kier process could be greatly increased by making certain additions to the liquor and, particularly, by pretreating the cotton with e.g., acids and oxidizing agents, such as Chloramine T or hypochlorites; such pretreatments appeared to cause attack on the primary wall of the fiber and to facilitate greatly the subsequent attack by alkali, so that prolonged pressure-boiling could often be effectively replaced by a continuous method of kiering. This was the basis of many of the processes used in the Soviet Union, which made use of continuous "Mathesius" kiers for boiling the pretreated fabric in alkali and for treating it in alkaline hydrogen peroxide when this agent was used for the whitening stage.

The American processes were described in detail, and the qualities of the finished product were discussed and compared with the qualities of the products of the older processes. The relative merits of hydrogen peroxide, hypochlorite, and chlorite for the whitening stage were considered, and the use of fluorescent brightening agents was described, with some discussion of the difficulties

that might arise in their use.

In discussing the relative merits of continuous and batch methods of processing, Dr. Stubbs said that in large countries, such as the U. S. A. and the U. S. S. R., where single production units handled a comparatively few types of fabric in very large amount, the desirability of adopting continuous, running on a three-shift system was quite obvious. In our country these methods were not so readily applied because of the large variety of goods that we must necessarily process to suit the varying needs of our many markets, and also because of the predominantly non-vertical, commission basis of our industry. In times of recession in trade, such as we have recently experienced, the continuous system would show particularly at a disadvantage, but the advantages that were normally to be gained from these methods were such that it was difficult to escape the conclusion that the installation of a small number of these ranges in this country would be justified. Until such ranges were installed and we had gained the necessary experience of this operation, it would be difficult to estimate the extent to which they could be introduced further with advantage. For example, it was possible that some of the lower quality, dirtier, and "motier" cottons that we had to deal with here would have to be given special treatment. It was possible also that we should find that the future of bleaching in this country lay more in the exploitation of some semi-continuous modification of the methods of which we had such long experience. In particular, the days of hypochlorite were not necessarily numbered. The last word had not been said about this old whitening process, which could be readily made continuous and could be combined with suitable continuous or semi-continuous scouring treatments. However, the practice of bleaching was undergoing a revolution in many parts of the world, and the lecturer suggested that the new, highly productive methods that had developed constituted a challenge to us in Britain, and that it was for us to consider how that challenge could best be met, taking into account, of course, the peculiar features of the finishing trade in this country. Anon. *Textile Manufacturer 79*, 40 (January, 1953).

AUTOMATIC pH CONTROL IN EFFLUENT TREATMENT AT A WOOL MILL

Modifications which have recently been made to the waste-treatment plant at a wool mill in the West of England illustrate the type of simple alteration which can sometimes effect considerable improvement in the quality of an effluent. At this wool mill the waste waters are derived from wool scouring and from dyeing and finishing piece goods. The scouring liquors are cracked with acid for recovery of wool grease, and the aqueous layer is mixed in the treatment plant with the rest of the waste waters. The total average flow of waste waters is about 20,000 gal. per hour during a working day of 10 hours.

Formerly the waste waters were flocculated by placing blocks of aluminum sulphate in the channel along which the major part of the waste waters flowed. Part of the liquor from the acid-cracking plant entered the channel just below these blocks, lime slurry was then added from a continuous feeder, and the remainder of the acid-cracked liquor was then introduced. The final mixture flowed down a long channel to three sedimentation tanks in series with a total of about 300,000 gal. In this plant there were no means by which the amount of lime slurry added could be adjusted to correspond to variations in the pH value of the waste waters; in consequence flocculation was not taking place at the optimum pH value and pH value of the liquid entering the sedimentation tanks varied from 9 to 11.

On the recommendation of the Water Pollution Research Laboratory it was therefore decided to try to improve the quality of the effluent by determining the best conditions for flocculation with aluminium sulphate and by installing automatic pH control equipment. Experiments in the company's laboratory showed that good flocculation occurred at pH value of 6.6 and 8.9. It was decided to work at the higher value because the pH value of the untreated liquid sometimes rose above 6.6 and control by addition of lime would then be impossible; furthermore at pH 6.6, control needed to be more exact than at the higher value. The Kent-Multilec automatic pH control equipment installed includes an antimony electrode, the potential of which varies with pH value of the solution in which it is immersed, and a potentiometer which measures the potential of the electrode and controls automatically the amount of lime slurry added to the waste waters.

The lime-dosing equipment is simpler than is usually recommended by the makers of the control equipment. Lime slurry is prepared by allowing water from an elevated tank fitted with a gauge to run into the stock tank and by adding bags of hydrated lime as the level of water passes calibrated marks on the gauge. The slurry, which contains about $3\frac{1}{2}\%$ $Ca(OH)_2$, is stirred continuously in the stock tank. For use, the slurry is pumped to a head tank which has an outlet pipe which discharges to a splitting box and which

is provided with a hand control valve; excess slurry in the head tank returns through an overflow to the stock tank. In the splitting box, a movable trough, controlled by the pH recorder, discharges a variable proportion of the flow to the point of application of the lime and the surplus is returned to the stock tank. By making manual adjustments to the valve controlling the flow of slurry to the splitting box to allow for known major changes in the acidity of the waste, it has been possible to increase the sensitivity of the automatic control.

In the modified plant, the acid-cracked liquor is mixed with other waste waters before the coagulant is added. For the time being, aluminium sulphate is still added by placing blocks in the channel but trials are being made by which a solution of the coagulant will be added in controlled amounts. Shortly after the addition of the aluminium sulphate, the lime slurry is added and the liquid is stirred by motor-driven paddles before flowing over a weir and along 350 ft. of channel to the sedimentation tanks. Just below the weir the electrode system of the pH recorder is immersed in the liquid and baffles are placed in the next 25 ft. of channel to assist flocculation.

The average dose of lime added is about 800 parts per million calculated as $Ca(OH)_2$. The usual amount of aluminium sulphate used is 400 parts per million, but this is subject to variations in accordance with the class of work in process in the mill. The period of retention in the inlet channel is about 15 min. By the time the treated liquid has reached the end of the channel a small floc has formed and this rapidly increases in size in the first sedimentation tank. Most of the floc settles in this tank which is cleaned at intervals of 3 or 4 weeks. The other two tanks are cleaned at longer and less regular intervals.

The improvement in control of the pH value of the final effluent is not brought out very clearly because the balancing effect of the sedimentation tanks disguised the variations which occurred during the earlier period, but the improvement in flocculation can be seen by the reductions effected in biochemical oxygen demand and permangate demand of the settled effluent. The absence of improvement in the content of suspended solids may be an indication of inefficiency in the sedimentation tanks, and it is possible that if sedimentation were improved, a further reduction in B. O. D. might result.

It does not, however, appear likely that any very considerable further improvement in quality could be obtained by chemical and physical methods alone. If further reductions in biochemical oxygen demand and permanganate demand were required, it would probably be necessary to use biological methods of treatment, either for the waste waters alone, or in admixture with domestic sewage at a sewage works. R. Wilkinson. *Textile Manufacturer 79*, 47 (January, 1953).

430 TAGS OR LABELS PRINTED PER MINUTE

A rotary imprinting machine is claimed to be 250 percent faster than equipment presently available. By using this unique rotary principle and the spirit duplicating process imprinted tags or labels are produced at the rate of better than 430 per minute. No type has to be set, a standard typewriter is used, saving more time and allowing the use of untrained personnel. Changing from tags to labels or from different size tags or labels requires only the turn of a knob. All internal mechanical changes are accomplished simultaneously. The machine requires no ink or ribbon and only a minimum of service is required. Anon. *Modern Materials Handling 7*, 148 (February, 1953).

HOW A MILL WAS INSULATED WITHOUT A PRODUCTION SHUTDOWN

The Limestone Mfg. Co. at Gaffney, S. C. recently insulated an old mill building without a production shutdown. Not a minute was lost in their weave rooms, not a machine was moved; in fact, the construction crew never entered the building.

The problem was solved simply and directly. The mill needed insulation. The condensation which formed on the walls and ran over the floors was an accident and maintenance problem. Production-wise the condensation made it impossible to maintain correct temperature and humidity control in the mill. This is one of the greatest hazards in an uninsulated building where such control is of major importance.

Mill executives determined that a shut-down of production was almost as undesirable as the condensation, and if the standard insulating job was to be done, a shutdown was necessary. Frank Hill, consulting engineer of Welford, was called in to find a solution. He agreed that the looms were too close to the wall areas to permit a construction crew to operate without stopping production. This was an outside job, Hill determined.

Working with engineers of the Pittsburgh Corning Corporation on the insulation details, Hill devised plans to insulate the Limestone mill with Foamglas, with a brick veneer finish.

New footings were set in place alongside the existing foundation. The brick was cleaned and wall ties set in place in mortar joints. 2″ thick blocks of Foamglas were adhered to the existing brick walls of the mill using a full back bed of asphaltic cement. The 4″ brick veneer was then laid up imbedding the exposed wall ties in joints. Since it was only necessary to insulate the first floor of the mill, the Foamglas and brick was carried up the existing wall to a point just above the second floor where a concrete cap, with the necessary flashing was placed.

The insulation job was completed in less than two weeks. The weaving operation carried on as usual, less one annoying factor—the condensation. Mill authorities state that this interesting construction job solved the problem to their complete satisfaction; stressing that insulation is almost a necessity to an economical and efficient mill operation as the looms themselves. Anon. *Textile Age 17*, 14 (February, 1953).

MODERNIZE—OR MOVE OVER

Modernize or move over. That's the advice to the textile industry from the people who make its equipment—the textile machinery manufacturers.

This warning comes as no threat or gimmick to boost sales on the part of the machinery makers. It contains the flat truth that poorly equipped mills which have managed to stay in business under conditions of high prices and high demand have got to re-equip themselves with today's modern machinery or step aside and make room for more progressivec concerns. Every mill executive with his eye on the ball realizes all too well that the "dreamy years" are done with and a period of intense competition lies ahead. A lot of mills may be headed for the dam, and the one factor most likely to save them is a modern, efficient, low- cost plant—a "penny-saver" in these days when pennies count.

Contrary to the general optimism currently expressed by their industry cousins, most textile machinery men are not optimistic for 1953. The reason? Mill men have not yet indicated they realize the seriousness of the competitive situation and thus have been postponing orders for much-needed machinery and equipment. Machinery men note sadly the oft-repeated psychological axiom that when times are good and business is booming, and the mills have their tills loaded with cash, they are perfectly willing to spruce up the plant and real estate. Unfortunately, when the cycle runs the other way, there is a common tendency for mill owners to resort to expedient measures which may be a little more expensive in the beginning, but very definitely cheaper in the long run. This, in the eyes of the machinery men is "a h— of a way to run a railroad." They point out the few mills here and there which have tried by substitution of inferior machines or parts or by using some momentarily attractive cheap devices to save a few dollars now by purchasing equipment which seems to be cheap and to offer some present savings. All too often the result has been that mills which have followed such policies have found that they were much worse off than they would have been had they stuck to what has been found to be the best in the long run.

Such a policy works to the advantage of both the yarn and fabric industry and the machinery manufacturing industry. It means that the mills put off modernization which should be a continuing process. It also means that this pent-up demand puts a terrific load on the machinery makers. Actually, they point out, "it would be very much to the mills' advantage to install new equipment during periods of slow business because there would be less competition for delivery, and the auxiliary functions of erection and installation service would be more readily available to the purchaser. An official at Whitin Machine Works points out that "during times of stress, mills which are marginally profitable encounter serious difficulty in selling their goods. Mills which have modern, efficient machinery are the ones which continue in operation."

While there is a great potential market for new machinery, this market may, or may not materialize immediately. "Some business certainly may be expected from the repair and reconditioning of many older looms to put them into shape for running a full schedule at slower speeds," says a Draper Corporation official.

Down at Crompton & Knowles Loom Works, the feeling is that the recession in the machinery business will eventually improve but the timing of this improvement is still hidden." The textile machinery business is at very low ebb, and frankly, as we look at it for the time being, there is no immediate prospect of its improving," says a company spokesman. "Unless there is a real pick-up in orders for textile machinery, many and probably most of the concerns will be dragging along at pretty much the bottom."

Another textile machinery maker who thinks 1953 may show some improvement over 1952 is H. W. Butterworth & Sons Company, makers of textile finishing machinery and rayon equipment. Says Butterworth: "The textile industry, re-

covering from too much inventory, shows signs of returning to normalcy. New finishes are appearing as are new fabrics, requiring different techniques and, in some cases, new machinery. Rehabilitation of present equipment should also stimulate buying. Better prices and delivery of machines should also contribute to the upswing."

With most experts predicting a much better year for the textile yarn and fabric industry in 1953, the question arises, "why aren't machinery makers also more optimistic, since they are so closely allied with the industry?" The answer comes from President J. E. Butterworth: "There is always a traditional lag of six months for manufacturers of machinery behind the production curve of the mills. Perhaps this is normal and nothing can be done about it." But Butterworth thinks periodic discussions of future requirements between mills and suppliers might reduce this gap for a mutual benefit.

The outlook is not all bleak, however. The machinery makers haven't been standing around with their hands in their pockets during the tedious waiting period. New models and improvements have been coming off the drawing boards and many will make their debut during the current year. For instance; Whitin Machine's research department has been operating on a fully organized basis, conducting both pure research into some fundamental problems in textile yarns making as well as new models. Some of these are fairly close to completion and may be announced to the trade during 1953. Among Whitin's new projects are picking, combing, roving, spinning, twisting, winding and units for the American system. Some of these are certain to be major machine developments while others will be in the nature of improved machine design.

During 1952, Whitin made several important contributions to machinery improvement, some of which have been developed and announced, and some of which are nearly ready for presentation to the trade. Among these were the F3 spinning frame for large package spinning, which was well received. Whitin also introduced the American system roving frame called the GIOD during 1952, a frame which incorporated all the best known features for roving frames tailored to the requirements of the American system.

Over at Draper Corporation, the new Draper XD loom with the 2 x 1 box motion is expected to be in demand resulting from modernization being carried on in cotton mills. "Change in width requirements and the growing interest of the industry and the public in the new synthetic weaves and blends means a continuing demand for the Draper XD," notes an official.

Saco-Lowell brought out its Gwaltney spinning frame during 1952, product of many years of extensive research and development. This revolutionary frame embodies a unique departure in principle from existing models and offers the mill owner reduced costs and a high quality of product.

Further evidence that textile machinery manufacturers are ever-improving their product lies in the disclosure by Saco-Lowell that over one-third of sales made during 1952 were of machines unknown to its customers four years ago. Predominant in the company's 1952 sales volume were new roving and spinning frames for both worsted and synthetic fibers, together with the previously mentioned Gwaltney spinning frame.

As to the outlook, Saco-Lowell has this to say: "Production schedules projected through the first half of 1953 are greatly reduced from a year ago. Since several months elapse between the time we receive an order and ship the machinery, a very sharp revival in demand, not now forseen, would have to take place in the near future in order for us to increase our total 1953 volume over 1952 levels." But, says the company, if confidence is restored in the textile industry, the improved labor-saving features of new machinery should prove increasingly attractive to the mills.

Proctor & Schwartz, another leader maker of textile machinery, thinks the outlook, generally, is better for 1953 than it had been in 1952. "There seems to be a definite trend toward more active plans on the part of the industry, and, while activity has been generally low, there has been an encouraging pick-up during the last quarter," the company says. "We are working on several new items of equipment which we hope will be offered for sale during 1953. We have already introduced new machinery in the textile drying field which should stimulate activity during the year."

This company also makes definite note of the synthetic fiber influence. "Recognition of the potentials in the field of new fiber application has stirred mills to inquire what machinery applications are suitable for these special and new products. Active purchase of machinery is dependent upon investigation and research by mills. Activity rests largely with what reference to government restrictions on plants other than for nylon," says Proctor & Schwartz.

From Warner & Swasey comes sober suggestion that mills make a very thorough analysis of the increased demand for synthetics and blends of synthetics with wool in the longer staple and particularly the extent of which this demand will

affect the future business of that mill. "The time is not coming, but is here now when this study should be made," says the company's textile division sales manager. "Following the decision as to such demand, an evaluation of equipment best suited to process the required yarn should be made and purchased at least to the extent of a pilot unit. This unit should be flexible as possible in order for the mill to experiment and determine the particular set up necessary for its requirements," this official points out.

Another touchy subject with domestic textile machinery makers is the growing affect of foreign imports on their business as well as diminishing markets abroad. Obviously, they point out, with the industry in its present depressed state, a very small amount of imported machinery assumes the position of having kept important business from domestic plants which need all possible work so badly. They note that low prices at which much foreign machinery is offered reflects the low wage scales in the countries of origin. The appeal of such machinery to the American buyer is to be found in its price rather than in any technical superiority, they say. "Tariffs are not only as low as they should be permitted to go on imported textile machinery, but should be raised to provide the full protection that the manufacturers in this country need," says Crompton & Knowles. Anon. *America's Textile Reporter 67*, 15, 31, 207, 209 (February 19, 1953).

NEW OUTPUT PLANS AID TEXTILE MILLS

Innovations in production planning of textiles have cut the risk of top-heavy inventories, textile engineers said last week.

A visual system of production control which has undergone six months or more of tests under actual working conditions has reduced in-process material inventories by 50 per cent in some of the largest weaving installations in the country, according to Peter M. Fekula, management engineer associated with Barnes Textile Associates, Inc.

Originally an automotive and aircraft engineer, Mr. Fekula has been able to apply to textiles a new technique to solve the intricate problem of synchronizing production to sales. Production scheduling in the automotive industry, for instance, Mr. Fekula said, has been reduced to a fine science which results in split-second timing in the arrival of component parts of a car to the right place on an assembly line and the working in of segments to meet the orders of the individual customers who have specified color, upholstery preferences, and various items of equipment.

Production often haphazard—

Production scheduling in textile mills, Mr. Fekula said, has generally been conducted on a haphazard basis, and was often left in the hands of department heads, some of whom were unable to determine what progress was being made in other parts of the mill not under their jurisdiction. The problem was different from that of cost control, which might be solved by business accounting machines using punched cards. Mills in towns off the beaten track would not find it easy to obtain experienced business machine operators.

At Avondale Mills, the production control rooms of each mill unit are lined with large size Sched-U-Graph charts, four feet square, each capable of holding tickets for sixty to 100 textile orders. The visual tabs of the order tickets contain all information pertinent to the order such as the lot number, quantity, completion date, and material required. These order tabs, colored red, are covered each day with green progress tabs. A date line consisting of a taut cord running vertically across the charts is moved one notch to the right each day to denote what portion of the work is on schedule, ahead of schedule, or behind schedule. The order tabs themselves remain stationary.

Print deliveries speeded—

The system installed for Cranston Print Works, Cranston, R. I., has been of great aid in speeding up deliveries, according to a report to Mr. Fekula by Godfrey S. Rockefeller, president. The production scheduling problem for Cranston's three finishing plants was especially difficult because of the combination of finishes possible for any given lot of goods.

With hundreds of orders coming through each day to any given finishing plant, lack of a workable control system could prove very disturbing, Mr. Fekula said. It was his opinion that much of the current delivery difficulties being experienced by converters of textiles and mills with their respective finishers stems from the fact that production runs are not properly scheduled, or at least are not in conformance with the completion dates quoted by the finishers' sales departments.

The effects of poor planning, Mr. Fekula said, are felt when a company fails to meet delivery schedules. To insure that promises can be kept, there is a tendency to carry inventories that will meet all contingencies. This results in a heavy increase of semi-processed and finished inventories and there is the added burden of keeping track of the excess material.

Favoritism another problem—

There is added confusion when preferential treatment is given to some customers. Orders already in work are shunted aside for those considered more urgent. In a textile mill this means changing warps before they have been run out.

When production planning is a responsibility of mill superintendents, it is not uncommon to find these supervisors spending more than half their time on work that could be performed by the production expediters. Mr. Fekula observed that in no instance was it necessary to employ more people on the coordinated control systems than were already working in individual production or accounting departments in this phase of the work.

Among the plants using the visual systems are cotton, rayon, wool, and towel mills, Mr. Fekula said. The latest installation, he said, is in a hosiery mill in Canada which seeks to streamline its production planning. Herbert Koshetz. *New York Times* (March 25, 1953).

TIME AND COST COMPARISONS OF BALE-HANDLING METHODS

Many industries find themselves in the same situation as the cotton warehousemen of the South. Traditionally materials have been handled in certain ways, but many new systems are constantly being introduced. How do you find out which method is better, the old or the new?

In studying the methods of handling cotton bales, it was found that several types of equipment, both old and new, were used. The figures shown here are the results of studies of several hundred trips, with each type of equipment. But it should be noted that the report is limited to the horizontal movement of bales from temporary storage areas to temporary storage areas. The figures include the pick-up operation, the carrying operation, the set down operation plus the return of the empty vehicle to the point of origin. The data shown for different distances are based on studies made of transporting operations at many different warehouses representing a wide variety of conditions. But the values do not necessarily apply to any specific warehouse. A graph (not shown in this condensation) shows the elapsed time required to pick up or load, transport for varying distances from the origin to the destination, and set down or unload 100 bales of flat cotton with a *single unit* of each of the following types of equipment:

- two wheel hand truck
- two bale capacity clamp truck
- four bale capacity clamp truck
- twelve bale capacity tractor-trailer train

including the return portion of the trips to complete the cycle. The time shown at a distance of zero feet represent the total pick up and set down time for 100 bales, with each type of equipment even though no transporting time is involved.

- The figures show that, when employed as a single unit, the hand truck is the slowest type, even for very short distances. The only method to obtain speeds comparable to the other equipment is to increase the number of truckers.
- For most of the distances represented on the graph, the single 2-bale clamp truck appears slow in relation to the single 4-bale clamp truck and the 12-bale train but it is very much faster than the single hand truck for all distances.
- The time required to move 100 bales is a reflection of speed. Although speed is particularly important during peak periods of receiving cotton, it must be remembered that the fastest method of transportation may not be the most economical.

A graph (not shown in this condensation) shows the estimated costs of picking up or loading, transporting varying distances from the origin to the destination, and setting down or unloading 100 flat bales of cotton with the different types of equipment under consideration, including

Textile Dyeing

and

Finishing Plants

A Record of Service As Measured By:

Number of Engagements	250
Number of Clients	over 100
Complete New Plants	25
Major Additions	20
Reports, Appraisals, Studies and Minor Additions	over 200

Locations:

In nearly every state east of the Mississippi, Canada, Mexico and South America.

Cost of New Plants and Major Additions ..... over $55,000,000

Lockwood Greene Engineers, Inc.

Architects • Engineers

Boston 9, Mass. 40 Central Street
New York 20, N. Y. 10 Rockefeller Plaza
Spartanburg, S.C. Montgomery Bldg.
215 St. James Street, West, Room 601, Montreal, Canada

the return portion of the trips to complete the cycle. This graph also contains computations for multiple unit tractor-trailer trains because of the drastic differences in costs between multiple and single units. The number of units of tractor-trailer trains was increased throughout the range of distances shown on the graph from 2 units to 7 units, in direct ratio to the distances traveled, in order to make efficient use of the loading and unloading crews.

In analyzing this graph, we see that:

- the costs with a single tractor-trailer train are higher than those of other types of equipment for all distances.
- the costs with multiple tractor-trailer trains are higher than either the 4-bale or 2-bale clamp truck for all distances.
- the costs with a hand truck are higher than with either type of clamp truck for all distances. The time study graph also shows that the hand truck is slower for all distances. But, it should be noted that the hand truck is cheaper over short distances than the tractor-trailer train.
- the cost with clamp trucks is much less than tractor-trailer trains in spite of the smaller loads carried on each trip—the reason being that no assistance is required from other workers in picking up or setting down the bales that are carried.

The chief reason for the comparatively high cost of tractor-trailer train operation is the necessity for using large loading and unloading crews and inefficient loading and unloading methods. The trailers are loaded and unloaded manually and hand trucks are used carrying the bales to and from loading and unloading stations. The crews are often idle between the arrival and departure of the trains increasing the cost of this type of equipment. There are some indications that an "upender" clamp attachment might be used effectively in the loading and unloading of trailers, reducing the costs of such operations.

How to Use the Chart

If the determining factor in choosing equipment is the cost of handling, the "break even" points are easily found. The points where the cost curves for two types of equipment intersect, show the lengths of haul at which the costs of handling are the same, or break even for both types of equipment. For instance, the costs of hand trucks and multiple trains are about equal for trips of 250 feet but, for shorter distances, the hand trucks are cheaper. For longer distances, the train system is less expensive. The break even points for one warehouse will very likely differ from those for another similar warehouse. The points shown here are illustrative and, although based on observations of actual applications of the equipment, they do not match the conditions of any one specific warehouse. Materials handling men who are interested in determining the break even points for their own plants should analyze their own handling costs in a similar manner.

How Costs Were Figured

The cost elements which entered into the computations for the graph are:

- Costs of Labor were assumed to be $1.00 per hour for unskilled labor (hand truck operators) and $1.25 per hour for skilled operators (powered equipment operators).
- Costs of Ownership, Maintenance and Operation of the equipment were based on a preliminary analysis of reports from cooperating warehousemen over a two year period for specific machines. On the basis of 2,000 hours of operation per year and an assumed depreciation period of 10 years for hand trucks and 5 years for powered trucks, the computed costs per hour for each item were:

Type	*Cost per Hour*
Two wheel hand truck	$0.0043
Two bale clamp truck	.93
Four bale clamp truck	1.27
Tractor and four trailers	.54

	1,500 hrs.	*1,000 hrs.*	*500 hrs.*
Two bale clamp truck	$1.05	$1.32	$2.13
Four bale clamp truck	1.47	1.87	3.07
Tractor and four trailers	0.51	0.62	0.96

Labor and equipment costs are combined to obtain the total cost of the operation as shown in the graph. Included in the cost of the tractor-trailer train operations are a five-man loading crew and a six-man unloading crew. In this case, there is one cost when a single train is used and a lower cost when additional trains are used as the waiting time of the loading and unloading crews is minimized. But, with the other equipment, there should be no difference in the cost whether one unit or a number of units are used for the same distance.

No matter how many units of equipment are used to carry them (with the exception of tractor-trailer trains) the cost of transporting 100 bales remains the same. The time required to move 100 bales varies, of course, with the number of units of equipment used. To illustrate: according to the time curve for a 2-bale clamp truck, 100 bales can be carried 300 feet in approximately 60 minutes. That is about 100 bales an hour. If two trucks were used, the time would be cut in half and each truck would have to carry only 50 bales, reducing the number of trips for each truck by a half. And, as the cost of using two trucks and operators for half an hour is the same as using one truck and one operator for a full hour, it follows that in using additional clamp trucks, the

rate of production may be increased to equal or exceed that of the tractor-trailer system without increasing the cost. Jo Brice Wilmeth and Charles D. Bolt. *Modern Material Handling 8*, 127, 129, 131, 132, 133 (February, 1953).

TEXTILE RESEARCH ACHIEVEMENTS IN 1952

A prominent educator recently criticized the textile industries for their lack of research, saying that they depend on the machinery producers for equipment improvements and the chemical industries for new fiber and dye developments. We admit that we expect machinery manufacturers to conduct research to improve and develop equipment for use by the weavers, dyers and finishers. Likewise, we look to chemical companies and yarn producers to give us the new fibers with which improved fabrics can be created, and we rely on the dyestuff producers to pioneer in the research necessary to enable dyers to process those fabrics successfully. But we regard all of them as important segments of our great industry, and it is not true that the mills or finishers are lacking in initiative or lagging in research. It must be remembered that many of them are constantly making processing improvements through their own research efforts, but the details are not disclosed in the literature.

In the following review of textile research achievements, no attempt has been made to list every new product, process or piece of equipment which was announced in 1952, but those which are mentioned are evidence of real progress in everything from fibers to finished fabrics.

Fibers and Yarns Achievements—

Man-Made Fibers—We await with patience, fortitude and trepidation the advent of some fabulous fiber which will do everything that a yarn producer dares to claim and at the same time be cheap and available. Also from Japan, probably inspired by our great consumption of fabrics called sharkskin, came word of Cetalon, a protein fiber said to be derived from shark waste. Adopting what appears to be the hard way to create new fibers, scientists from the same country disclosed details of a method for making an acetylated fiber by using viscose staple as a base.

Under a licensing agreement with the French producer of Rhovyl, plans were revealed for the making of Movil, a polyvinyl fiber in Italy, while the German Phrix Co. began production of "Redon" acrylic fiber. Several of the newer man-made fibers have been a pain in the neck to many spinners, weavers and dyers. A more cheerful

TESTED IS TRUSTED

Are you interested in

QUALITY

OF

FILAMENT

YARN AND THREAD

FABRICS

SEAM CONSTRUCTION

TWINE & CORD

MECHANICAL FABRICS

SCOTT TESTERS* are the accepted standard for textile testing in accordance with methods and specifications of U. S. Govt. technical societies, commercial and industrial laboratories. We offer a range of physical testing equipment to fulfill the varying requirements of research and control encountered in textile mill operation . . . with results in the form of picturized charts that speak a universal language and are invaluable for filing and reference.

Model J. Constant-Rate - of -Traverse Tester, standard tensile tester for both skein and fabric. Also for burst test.

IP-2 Serigraph Constant-Rate-of-Load tester for testing filament and yarn in single ends up to 4 lbs. tensile.

CATALOG UPON REQUEST

* Registered Trademark

Scott Testers, Inc. 94 Blackstone St. Providence, R. I.

Southern Service and Repair Facilities: SCOTT TESTERS (Southern) INC., Spartanburg, S. C.

Southern Sales Rep: JOHN KLINCK, 304 West Forest Ave., North Augusta, S. C.

note emanated from France where one doctor claimed that the wearing of Rhovyl fiber gave relief from rheumatic pain, suggesting that the soothing effects were due to the static charges generated by the fiber passing through the body. German-made Perlon was to be made available in 1.4-denier staple fiber early this year, promising new possibilities on spinning counts up to 150s.

There were but few official announcements of new fibers in the United States during the past 12 months. The trade papers carried reports of another contender in the field of cryptic acrylics, Eastman's M-24; also, Celanese's experimental high-tenacity yarn, X-36, and Du Pont's No. 109 viscose. Perhaps concerned with the possibility of being accused of relying on numerology rather than chemistry to synthesize new fibers, Creslan and Cyana were registered by the American Cyanamid Co. as likely names for their acrylic fiber and yarn originally introduced as X-51. American Bemberg Corp. entered into the production of staple early in the year and some months later announced Syntussa as its new thick-and-thin acetate yarn last fall. A new version of Dynel with improved heat-resistance was promised by Carbide and Carbon to supplement their present fiber, and Saran introduced multifilament yarns in a wide range of colors as well as ten-denier crimped staple for drapery, suiting and carpeting blends. Minifil coarse-denier continuous-filament viscose yarns were created by American Viscose to yield unique effects in woven and knitted fabrics, while their Avcocel was said to be a cellulosic fiber with thermoplastic cellulose ester coating, suitable for use as a binder in plastic laminates. Celaperm was the name given by Celanese to their spun-dyed acetate yarns in a wide range of fast colors while Tennessee Eastman Co. expanded output of Chromspun acetate to include staple as well as continuous filament yarns.

Converting production from continuous filament viscose to staple, Hartford Rayon was expected to be marketing fiber early in 1953 and the English Courtaulds Company's new American plant was also scheduled to be in production on viscose staple shortly. New synthetic fibers were said to be under development by Dow Chemical and B. F. Goodrich, among others, and Allied Dye and Chemic made known plans to erect a plant to spin Nylon 6 polymer within the next two years.

Quite a few interesting patents were issued in the field of man-made fiber during the past year. Several of these pertained to the manufacture of Meryl, a low-shrinkage, high tenacity viscose yarn, described at the Textile Research Institute meeting in November by a representative of the French Comptoire des Textiles Artificiels. Another patent assigned to this company covered the treatment of rayon fibers with dry saturated steam to reduce swelling and hygroscopicity and just a few weeks ago the same producer disclosed a novel method of dry spinning, a cellulosic yarn from a thick aqueous solution in air at room temperature.

Disappearing yarns continued to intrigue several yarn manufacturers, and details of a water-soluble cellulose yarn were described in a patent assigned to Courtaulds early last summer and another type of water-soluble yarn was patented by Union Carbide and Carbon in September. Celanese invented a yarn made from a mixture of normal and partially saponified acetate staple resulting in novel effects after dyeing. Artificial filaments containing solid particles which lie wholly on the inside even though many are larger than the diameter of the filament, were the subject of still another inventor's patent, the bulbous swellings supposedly contributing to the fibers' insulating properties. A unique coated rubber thread was made by applying nylon from a formic acid solution, according to a British patent. Among patents awarded to Du Pont were a process for making a crepable regenerated cellulose yarn by spinning and combining into a single yarn on a direct spinner a group of filament yarns with different shrinkage characteristics and several methods for making improved polyvinyl alcohol fibers. Just a few weeks ago, the patent literature disclosed a process by American Viscose in which two yarns of different composition were combined, their differential shrinkage in woven fabrics imparting a boucle effect.

Several patents concerned with fiber manufacturers were issued to companies not engaged in the commercial production of textile yarns. Fiberfrax, a light-weight creamic fiber, made by Carborundum from aluminum oxide and silica, was characterized by extremely high heat resistance and good insulating properties. It was claimed that mixtures with other fibers had been successfully carded and spun into yarns. Protection of cellulose fiber against heat ageing by incorporation of a guanidine carbonate in the fiber was claimed in an invention of United States Rubber. Standard Oil Development Co. recently received a patent on the production of a yarn composed of acrylonitrile and isobutylene.

Natural Fibers—

No annual review would be complete without some mention of the perennial ramie fiber. Last year the Army Ordinance Department reported

that the most successful fiber substitute for silk in powder bags to date was ramie. From Florida, the birthplace and burial ground of many a ramie venture, emanated news that one more new degumming process for this hardy fiber had been developed.

In December, a California cotton man announced the invention of what was believed to be the nation's first portable cotton compress, representing the unique combination of 25 years of dreaming, ten months of work and an outlay of $225,000. In Georgia, a company was said to be working on a special process to develop a more lustrous cotton, but further details were not revealed. An improved method for aminizing cotton, making it more readily dyeable with acid dyestuffs and at the same time improving the fastness of direct colors, some of which also contributed flame resistance, was originated in the Southern Regional Research Laboratory. Replacement of kapok by superfine fibrous glass in Navy life-preservers was credited with saving almost a half-million pounds of that scarce natural fiber in one year.

Although one of the attributes of the man-made fibers is said to be their non-irritating quality, some wool groups showed signs of being slightly allergic to the mildly exuberant allegations of several chemical fiber supporters. However, the synthetic fibers were not the sole irritant, since a competitor from the animal kingdom, the chicken, threatened to graze on the sheep's territory when the Army Q. M. Corps suggested tremendous potential saving anticipated by replacing wool with chicken feathers in comforters. Taking a cue from the producers of man-made fibers who have at times given coming-out parties for their debutantes identified with letters instead of names, the virtues of wool were extolled in a recent issue of *American Fabrics* as that old wonder "Fiber W." In Idaho, experiments in feeding sheep a new type of mineralized salt resulted in an outbreak of glamourous red-lipped lambs. This could be the forerunner of research to produce colored wool at the source of supply to compete with dope-dyed rayon.

New automatic silk reelers operating in Japan and improved soaking methods were two developments said to effect substantial labor saving, while in the field of finishing, experiments with the application of acrylic and silicon resins were considered promising in improving silk fabric strength and resistance to wear and sunlight.

What might truly be described as scraping the bottom to dig up a new natural textile fiber was indicated in the news story from Australia where experiments were carried out with thread-like fibers taken from marine growth roots. Although the fibers were up to eight inches in length and were claimed to be dyeable and rot resistant, the recovery process was admittedly expensive.

To end comments on the year's advances in natural fibers on a sweet note, banana and pineapple fibers were reported to have been spun and woven into fabrics on a newly-designed Philippine hand loom.

Testing Methods and Equipment—

Fiber and Yarn Processing—Improved mechanical cotton picking was promised by use of a new 600-pound picker working on a system of rotating blades and said to reduce fiber mangling to a minimum. Installation of a line of Junior cleaners with three spiked beaters at one mill resulted in the better removal of pepper trash and yielded more uniform roving. The Whitin GIOD superdraft roving frame was described as suitable for fibers and blends of all kinds in lengths of from two to seven inches, featuring inclined roll stands, new type springs to eliminate dead weighting of rolls and variable weight distribution. Saco-Lowell introduced the SG-1 Gwaltney spinning frame with 11¼-inch traverse to produce a one-pound package with reduced tension and tension variation, the Duo-Roth drafting system to increase fiber control and the F-5 roving system to handle fibers up to nine inches in length. At the Delaware Mills in New Castle, Del., the Turbo Machine Co. made the first installation of a new tow stapler on the Perlok patents.

A new long-draft unit for any Bradford spinning frame was announced last January by a Rhode Island machine manufacturer. At their Marcus Hook research department, American Viscose carried out tests on a 320-spindle gear-driven spinning machine designed to handle 100 per cent rayon, worsted or blends with drafts as high as 27. The Bigelow card compensator was a new device which provided means for controlling and improving the uniformity of roving on woolen cards. Uniform tinting of blends was accomplished by the Unitint machine, designed by a Southern machine company. Nylon-bearing top rolls requiring no lubrication were offered as an aid to produce cleaner yarn, and a Washington inventor patented an electronic circuit for apparatus designed to detect slubs in yarn. From Greenville, S. C., there was reported a new Unidraft ring spinning frame and a new adjustable gauge twister.

Taking a tip from the vogue for pre-blended baking mixes to turn out fool-proof products, a pre-blended raw felting stock called Ready-Mix

was introduced for the production of uniform, cost-controlled felt. An experimental hydro-sheave card drive to eliminate overhead shafting in spinning mills was tested at the University of Tennessee cotton spinning mill laboratory and is now ready for plant trials.

For conditioning and twist-setting yarns on bobbins or cones, a New Jersey firm introduced a cold water conditioner. A number of patents were issued during the year on new or improved double twisters. Barber-Colman was reported to be experimenting with an automatic spooler to handle cheeses from the Gwaltney frame spindle, and the Pneumastop electric eye stop-motion and waste-collecting device for roving frames was undergoing trials in several mills. The Durometer was an instrument marketed for testing the density of yarn on packages, utilizing a blunt contact pin and spring recorder with a dial gauge. An automatic radial quiller was offered by Abbot Machine, particularly designed for mills with widely diversified production.

Among foreign inventions which attracted interest were several German machines. One was the Pfenningsberg direct-spinner which spins directly from cotton sliver cans over a five-roller system with a leather apron final drafting roller allowing a draft of up to 100. Bremer Machine Works brought out fully automatic roller cards and carded yarn ring spinning frames with twist-drawing mechanism. The French De Stains K-10C direct spinner for processing tow to yarn was said to give close control over fiber length. Details of the new Swiss Rieter fiber blending system were disclosed and the same company received a patent in this country on apparatus for producing spun yarns from continuous filaments. Exhibited at the Milan Fair were an Italian cotton card featuring lap feeding and sliver delivery in front of the card and delivery of flat strips into a box through a pneumatic system and a spindleless conical bobbin winding machine for rayon; also, spinning frames with a pendulum drawing device with drafts of from 30 to 50.

English developments during the past year included an improved Supercop winder, a self-contained yarn tension recorder, an anti-wear broadgate tension for synthetic yarns, a patented exhaust cleaner for cards, and a new brush for use on ring frames to remove loose fibers. The Feco self-contained light-weight rotating spindle permits cleaning of fly during running of the frames. The Shirley Institute announced that a new cotton opener and cleaner would be available in 1953.

Warping, Slashing and Weaving—for elimination of sparking and other annoyances associated with electromagnetic devices for warper stop-motions, McBride introduced hermetically-sealed mercury switches. The Southern Research Institute, under the sponsorship of the Avondale Mills, built a wet-lease system into a slasher to improve sizing and thereby reduce warp shedding, and Proctor & Schwartz has devised a new air slasher dryer with a capacity of up to 1,000 pounds per hour. The increased popularity of homogenizers for preparing sizing materials was evidenced by the introduction of a new 800-gallon per hour machine developed for mill use. To reduce sticking of sized yarn to slasher cylinders, Teflon polytetrafluorethylene resin was applied as a coating to those cylinders. A small model Gentle-Air dryer was marketed by Uxbridge and recommended for mills requiring up to 750 pounds per hour drying capacity.

New models of the Crompton & Knowles filling-mixing looms were described in detail last month and deliveries were expected to be made early this year. Disco Industries introduced a narrow fabric loom for weaving zipper tapes and similar materials at 2,000 picks per minute, inserting the filling by a needle and taking the yarn from large cones. The Italian Sitam narrow fabric shuttleless loom featured a flat picking arm synchronized with the shedding motion at speeds up to 900 picks per minute. A hand loom weighing only 33 pounds was said to be suitable for weaving plain, twill and satin constructions in widths up to 76 inches. A king-sized suction system for cleaning looms was offered by a Connecticut machine company.

Interest in shuttleless looms was not lagging, and one patent issued to Draper covered a method of controlling loose ends of filling picks inserted with carriers at both ends. Details were disclosed of the Swedish Maxbo shuttleless loom which uses air current to carry filling through the shed at 40 meters per second with the loom operating at 350 picks per minute. The French Sobretex high-speed loom uses a new type of picking arm on each side of the loom, doing away with shuttle, drop boxes, and preparatory filling winding.

Research at our textile schools continued to show progress, and at Clemson, special temples were developed to grip fabrics without rolls, and an eccentric drive gearing designed and installed at the same school permitted a 12 per cent increase in loom speed without increasing shuttle speed or reducing picking time. Mill research organizations also played an important part in making contributions to the industry, and the Deering Milliken Research Trust offered a new beam brake for cotton slasher creels to minimize

run-out-waste. A few weeks ago, West Point Mfg. Co. reported that a new plastic laminated vibrator block for Draper looms, made with their Lantuck non-woven fabric as a base, was giving far longer life than the conventional wood blocks.

From abroad came a new English high-speed sectional warper featuring variable speeds up to 800 yards per minute, a Swill metal harness-frame regulator, an English hydraulic beaming machine, a German device to permit automatic attachment of strings of four different colors to mark fabric faults in the selvage; also the Knotex German high-speed knot-tier, and a French device for automatic shuttle changing. A streamlined version of the Fayolle-Ancet circular loom was exhibited in Italy.

Finished Goods

Dyeing and Finishing—During the past year almost 500 new or improved dyestuffs, pigments and textile chemicals were made available for better dyeing and finishing of fabrics composed of natural and man-made fibers.

Alarmed by or ashamed of "The Man in the White Suit," no small amount of research was directed at making the newer synthetics more readily dyeable. A British inventor claimed improved dyeing of Terylene fabrics with dispersed acetate colors by short pressure steaming. Deep shades with good fastness properties were achieved in the package dyeing of Orlon by a North Carolina firm, while a student paper presented at the Piedmont Section of the A.A.T.C.C. disclosed results of the pre-treatment of Orlon fabrics with ammonium thiocyanate solution to give deeper shades with vat colors. Satisfactory methods for printing fabrics of acrylic fibers were described at the annual A.A.T.C.C. convention in Boston in November, and roller printing of 100 per cent Dynel fabrics was accomplished by a technique employing vinyl resin inks, with claims for good light and washfastness and high crock-resistance in a full range of bright colors. Du Pont sponsored an all-day technical conference in Wilmington last summer and showed a semi-commercial model of the new Barotor machine for pressure dyeing of fabrics of all synthetic fibers and gave details of new dyestuffs and application methods for Orlon and Dacron.

Static electricity charges generated in garments made of the newer hydrophobic synthetics shocked research workers into developing a number of finishes to minimize this objectionable characteristic of many fabrics. Most of them were of the non-durable type, some being intended for use as a rinse in home laundering, but its true function was for the investigation of static charges on materials in process or arising from machine operations. The electrostatic locater was a somewhat similar instrument made by a Long Island concern.

New English developments pertaining to wool processing included a chemical treatment without the use of chlorine to reduce wool shrinkage and felting, the Maifoss process for producing two-toned effects on woolen fabrics without prior blending, the application of ultrasonics to wool scouring, and a boric acid treatment used in applying neutral dyeing acid colors. Reminiscent of the refrigeration technique advocated during the early days of nylon for everything from weaving to the preserving of hosiery, a British patent was granted on the passage of woolen fabrics through a freezing chamber during the finishing routine to give the fabric a good hand, clear colors and better "workability."

From Western Regional Research Laboratory came word of a wool scouring process using suint and alcohol to reduce felting, increase recoverable by-products and relieve stream pollution problems. Last month it was announced that Victor Chemical had purchased from Pacific Mills the process patent involving the use of diammonium phosphate in wool dyeing and was prepared to issue royalty-free licenses to textile firms.

Shrinkage control and improved abrasion resistance were claimed for a new resin finish for rayon fabrics developed by a New Jersey concern with trials on cotton fabric also reported promising, and another chemical company offered what they said was a unique resin finish which imparted durable water-repellency, shrinkage control and crease-resistance in one operation. Limited amounts of cotton and rayon fabrics were treated with nylon resin by a few finishers with claims of improved strength and abrasion resistance. A German publication reported on Siotex, said to be a new process utilizing silicone compounds, to impart increased wear-resistance to textiles. A pre-treatment of cellulosic materials to make them more receptive to impregnation with urea or melamine formaldyhyde resins was the subject of a patent obtained by the Southern Regional Research Laboratory.

The continued study of the causes and some remedy for tar spots in cotton was instigated by the National Cotton Council, and at least one chemical company offered a compound which they stated would dissolve such tar contamination in the wet processing of cotton fabrics.

At an American Chemical Society meeting in Atlantic City, certain dyes were described as imparting a high degree of water-repellency to cot-

ton and wool fabrics and at the same meeting a report was presented on a durable flame-resistant finish which did not impair fabric hand or strength and remained effective after as many as 100 commercial launderings.

Following the trend of what appears to be an almost insidious plot to make the housewife adept at everything from paper-hanging to television repairing, we have come to accept home dry-cleaning and dyeing as standard domestic practice. The Aerosol bomb has become as popular a weapon at home as the rolling-pin, dispensing everything from deodorants and insect-destroyers to liquid hairnets and furniture wax. More recently, at least half a dozen water repellents have been marketed in bomb form, comprised of either wax mixtures in solvents or silicone compounds, all intended for the easy application of a protective coating to every type of outerwear. Home moth-proofing treatment for woolens during washing was promised through use of EQ-53, a development of the U. S. Department of Agriculture, described as a mixture of DDT and chemical carriers. Also in the field of protective agents, the Army was reported to be trying out a new insect-repellent applied to uniform fabrics and affording protection against ticks, chigers, fleas, and mosquitoes. A concentrated organic chemical compound to whiten and brighten nylon when used as a rinse in commercial finishing was patented by a North Carolina firm, and Mohawk Carpet Mills received a patent on a soil-resistance pile fabric in which the non-wool pile was coated with water-insoluble substances containing a large proportion of silica.

The Celanese research department reported preliminary results of the application of silicone resins to acetate fabrics for durable water-repellency, increased soil-resistance and some improvement in resilience and abrasion resistance. The same company patented a method for producing a pile on textile fabrics made from yarns composed of a mixture of acetate staple and wool, and a process for dyeing acetate only in fabrics containing acetate and nylon. A new chemical treatment to increase the ironing temperature of acetate fabrics was described in a British patent, and the printing of partially saponified acetate fabrics by a silk screen technique to yield two-tone effects was exhibited at the National Science Fair in Washington.

The treatment of nylon cloth was selected, quinone compounds was said to improve its heat-resistance, according to the two co-inventors, delustering of Terylene was accomplished by use of sodium or potassium hydroxide at elevated temperatures, described in a British patent, issued early last year, while another British patent covered a method for dyeing nylon white with a substantive compound. Better control of nylon fabric heat-setting was said to be afforded by a "radiametric pyrometer" which measured fiber temperature during processing.

The textile research department of American Viscose described a method for processing acetate tricot in open width with reduced dyeing time, lower cost and a minimum of fabric distortion. They also began to license finishers to use their Avcoset rayon stabilization process and it was reported that considerable success was achieved in stabilizing viscose tricot fabrics by this method. Rayon fabrics can now be Everglaze finished to be wool-like, with a polished glaze, low luster, or textured surface effects, according to a recent announcement by Joseph Bancoft and Sons, Co.

For those of us who have not been persuaded to take our chlorophyll internally, in chewing gum, or in our bath soap, there was still opportunity to keep free from subway scents and avoid being social outcasts. Last year, Chlorophyll made its appearance in green prints on nylon for men's pajamas and underwear, in sheets and pillow cases, towels, mattress covers, rayon linings, in socks with the glamorous name of Sweet Feet, and even under foot in rug cushions.

General Dyestuff announced their Genray process as a slowed-down padding method for dyeing vat shades on rayon by the continuous Williams unit. New to the field of dyeing and finishing, Pittsburgh Coke and Chemical Co. demonstrated a pilot model of Bond continuous dyeing and scouring machine which operated by forcing liquor through holes in two perforated metal plates between which fabrics were passed. In England, the Turkhead dyeing process for viscose was said to give rayon yarn-dyed quality at piece-dyed price, with no disclosure made of the method which automatically mixes concentrated dye solution and impregnates the yarn in less than 20 seconds. A new dyeing provides for pressure bleaching boiling-off and dyeing of tricot fabrics, handling 4,000 yards or more in one operation.

As a protection against chafing and staining of fabrics during dyeing, an extended vinyl tape was made available for covering dye reels and replacing end cloths. Later in the year, the Hunter No-Lap reel dyebecks were introduced with the feature of providing traction without the use of covering, the proper tension to each strand of cloth being obtained through properly adjusted inverted V-bars. New dyebecks made by Rodney Hunt featured dual reel and plaitor cloth handling

system said to eliminate slippage and any need for wrapping the reels. A new Versamatic semi-decating machine with higher capacity, taking any type of fabric roll or fold and delivering in either form, was developed by the David Gessner Co.

Said to be only slightly higher in cost than screen printing, a new multi-color photo-printing process was invented to reproduce Kodachrome photographs on fabrics without engraved rollers or screens.

Foreign developments in dyeing, printing, and finishing equipment were fairly numerous during the past year. An Italian vigoureux machine was introduced which permitted drawing wool and synthetic tops and printing colors simultaneously. A Norwegian engineer invented a multicolor printing machine said to be 60 times more efficient than any similar press in use in Europe and the Austrian Zimmer automatic vertical duplex screen printing machine introduced a new technique particularly suited for printing quilts, blankets and towelling. The Swiss Desmo-Print mechanical screen-printing machine was said to be adjustable to tables and screens of all sizes.

Automatic stops and reversing, constant tension and built-in dye agitation were features of a new Danish jigger, one of which was in use in a New Jersey dyehouse. An Italian tensionless dye jigger with automatic controls and reversing device was said to be capable of handling the most delicate fabrics without damage. It was expected that U. S. patents would be issued shortly on a Belgian process dyeing machine which was capable of yielding level dyeing on fabrics made of the newer synthetics with saving of both time and power. Radio-active isotopes were used in connection with a detecting device created in a Scottish print works to determine color contamination in multi-color printing. A rope hydro-extraction unit introduced by a Swedish concern was claimed to save time and reduce handling. A patented British process provided means for obtaining ingrain or flecked effects on wool materials in a relatively simple manner.

An American investigator reported that among other foreign machinery developments of particular interest were the German Fametex and Swiss tenter frames with provision for changing from clips to pins in a short time; also, a German padder with unique roll arrangement to provide greater reservoir of dye liquor. The use of superheated steam dryers and bleaching unit and a horizontal padder were also described by visitors abroad. The Rapidsonic machine was offered in England as a device for providing very fine textile emulsions.

New Developments in Fabrics—

There was a time when "Mary" was considered a grand old name, but the increased popularity of the English Viyella fabric gave a tremendous boost to Ella. Within a few months, we were greeted by Lanella, Mayella, Gayella, Granella, Botanella, Dijenella, Nordella, Alpinella, Acryella, Permella, and Dynella.

Finer fabrics with greater opaqueness, the appearance of woven cloth, and the elimination of snagging were considered practical with the development of 40-gauge tricot. The setting up of standarads for warp knit fabrics was being undertaken by several producers and one finisher offered napped and sueded tricot materials in plain and fine embroidered effects. One weaver made available limited quantities of woven nylon crepe fabrics made under the Swiss Helanca patents disclosed in 1951, and men's stretch nylon hosiery using similarly processed yarns made their appearance in large volume late last year. A patent issued by Scott & Williams described means for making nylon crepe hosiery by use of permanently-crinkled yarn after removal from a knitted tube in which the loops had been heat-set.

Nylon laminated fabrics were found to be very effective as military body armor, and it was recently decided to use the same fabric for protective shorts for the lower part of the body. Another army garment designed as protection against gas and germ warfare was an air-tight, water-cooled suit made of butyl rubber.

Ny-Sul-Lite was the name of a new all-nylon washable batting prepared by Star Woolen Co., and a cotton warp nylon-filled fabric was made by a Philadelphia concern as an interlining for apparel coat fronts. Price was said to be competitive with hair-mixture constructions and the finish was resistant to cleaning, pressing or water-soaking. Water-insoluble coated nylon was the basis of a patent issued on Nylok cord used to make fishnet.

Apparently convinced that there is gold as well as aluminum in the metallic insulation lining fabrics which made their debut several years ago, a number of finishers and converters invaded this field during 1952 with such products as Temp-Resisto, Insul-Tex and Weatherwall window drapery lining. To really beat the heat, a Swiss firm was reported ready to market Tempex, a fire-proof material composed of seven layers of cotton fabric and aluminum foil, with the garments fabricated therefrom intended to protect

firemen in combating flames.

A knitgoods manufacturer introduced Perma-Sized shrink-resistant garments and Sanforized terry toweling was announced as an innovation by the Mooresville Mills.

In England there was an exhibition of an unsinkable swimsuit made with a panel of trapped air in a waterproof, kapok-lined fabric inserted in the front of the garment. Not unlike the method described several years ago whereby sheer woolen fabrics were created by combining the yarns with water-soluble alginate carrier threads, Imperial Chemical Industries, used a patented method for producing closely woven fabrics by ply-twisting cotton or rayon yarns with Terrylene and then dissolving the latter. A subsidiary of Courtaulds experimented with the use of polyethylene yarn in fused collars for men's shirts, and another English firm was said to have been successful in making overalls and sheeting of blended cotton and rayon fabrics, both withstanding severe service and laundering.

Acetate satin bedsheets and pillowcases were made by a Chicago company while an Ohio manufacturer offered paper ones as a low-priced replacement for rubber. A simple method suggested for removing the annoying static electricity charges built up in certain fabrics or plastics was to wipe the surface with a De-Stat cloth consisting of cotton fabric impregnated with antistatic compounds, and Rocloth antiseptic cloth was introduced as a treated fabric which had germicidal properties after immersion in water.

The currently widely-used blends of acrylic fibers with wool for stabilization against shrinkage were patented by Du Pont last May. Recognizing the vogue for pleated skirts, stimulated by the availability of blends containing adequate percentages of hydrophobic thermoplastic fibers, an English textile converter displayed a stimulated pleated effect on a cotton fabric obtained by applying a novel screen print.

Plastics continued to make some inroads on textile markets with a few novel products publicized during the last 12 months. The director of the Norwegian Textile Research Institute was reported to have applied for a patent on a method whereby a plastic material was converted directly into porous sheets, while good draping qualities were claimed for experimental bonded fabrics made in this country with extremely fine thermoplastic resin fibers. Cotton-base fabrics coated with polyvinyl chloride by an English process were given a deeper embossing than was normally obtainable in conventional plastics, reproducing the texture and appearance of soft fabrics. For two-target use, the U. S. Navy and Air Force were reported to have adopted a polyethylene leno material. An Ohio shade manufacturer announced that his Weavetex cloth reproduction made of polyvinyl chloride was almost as drapable as woven fabric, and one automobile manufacturer predicted widespread use of vinyl-coated nylon and Fiberglas fabrics for convertible automobile tops. Transparent plastic surgical dressings are a new Air Force development, the sprayed coating said to give immediate protection to wounds while replacing large amounts of bulky cotton bandages.

While we have often heard that some women looked as if they had been poured into their dresses, it remained for National Cybernetics Co. to advertise the claim that poured apparel was on the way and that the chemical industry has plans to produce fabrics by pouring a mixture of chemicals and textile fibers over flat mesh.

The popularity of dope-dyed acetate taffetas was somewhat jeopardized by the complaints of cutters, consumers and dry-cleaners who found that the water-spotting of the greige goods, commonly used with no finishing treatment, was most annoying until the research chemists came to the rescue with the development of spot-resistant warp sizing compounds. Manufacturers of silk fabrics recognized a similar objectionable water-spotting characteristic of their materials and were soon applying spot-resistant finishes.

A German manufacturer demonstrated the Ultraflor process for treating hosiery of all types of yarns to make them more run-resistant, and similar claims were made for an American product sold for home application with the assertion that the life of nylon hosiery could be doubled through the use of this chemical rinse. Just about when women are beginning to understand that 15-denier nylon hosiery cannot be expected to give the service of 30-denier, it was reported that 12-denier monofilament nylon would probably be ready for distribution this year. It will be recalled that some experimental hosiery was made with ten-denier yarns last year. Gotham Hosiery Co. apparently believes that hosiery needs as good protection as the aroma of freshly-ground coffee, and a few weeks ago, it was announced that some of their products would soon be marketed in a protective vacuum-packed polyethylene envelope.

Glass fabrics which can be stretched up to 70 per cent in each direction were offered by one weaver for use in reinforcing plastics. A new style trend and market for textiles was indicated in the offering of easily-detachable fabric covers

for electric refrigerator doors with curtains to match available in a variety of patterns. While not in the category of new fabrics, further ingenuity in the use of the man-made fibers and yarns was displayed in the announcement that nylon cord was used as a basic construction material for furniture and rayon flock was being applied to the coiled springs used in automobile seat cushions to take out the squeak.

Testing Methods and Equipment

For checking the uniformity of fiber blends of wool all the way from the picker to the loom, one mill suggested dyeing about one per cent of the wool with a fluorescent dye and using ultraviolet light to observe its distribution at various stages of processing.

The German Zillo-Test apparatus was described as a useful tool for rapidly identifying 30 different types of fibers with a special group of solvents. Selective staining and chemical tests were the basis of fiber identification techniques discussed by a research worker at a meeting of the A.A.T.C.C. last spring and analytical methods for staple fiber blends of all kinds were published in detail in the August issue of the *Textile Research Journal.* Microscopic dye staining and solvent separation procedures were also outlined in a paper presented at the September meeting of the American Association of Textile Technologists.

The Sander Shrink Tester, which was reported in a German publication, provided for automatic measurement of fabric shrinkage by gripping a sample between a lower fixed clamp and an upper moveable one, wetting it, drying and reading the shrinkage on a scale. This apparatus and procedure were apparently very similar to the American Strip Tester, details of which were recorded in 1950. The Abradoflex abrasion resistance tester was developed for asbestos textiles and other heavier grade fabrics, with evaluation based on loss in tensile strength. The National Bureau of Standards constructed an extrasensitive device for measuring stiffness rapidly and conveniently and it was expected that it might be useful for textiles as well as plastics.

Rapid determination of viscosity of sizing solution or similar mixes was made possible through the use of the Ultra-Viscoson, a new ultrasonic viscosimeter, and the making of color measurements for process control in less than 30 seconds was claimed for a device called the Colormaster Differential Colorimeter.

Developed at the University of Tennessee, the Stelometer was a pendulum device which permitted breaking of small tufts of cotton, the elongation being recorded at the same time. The Causticaire method for determining cotton fiber maturity and fineness was a new technique reported in a U. S. Department of Agriculture bulletin and a New Jersey firm introduced a universal tensile testing machine for testing fibers under loads of up to 1,000 grams and at elongation rates of from one-quarter to one-half inch per minute.

The Swiss-made Projectina projection instrument for the examination of fibers, yarns or fabrics at magnifications up to 400x recently became available in this country. Also from Switzerland came a unique test said to have been used to evaluate a new chemical fiber—a forced march of 30 kilometers by several employees on rough ground in stocking feet. Psychometrics for testing applied to textiles was introduced by U. S. Testing Co., utilizing a test panel for observations and reactions to design, color or texture, with statistical analysis made of the replies to specific questions.

The Celanese research department disclosed a new wrinkle tester constructed to simulate the clenched fist test on fabrics by producing wrinkles under controlled conditions. For more than a subjective evaluation, it was suggested that other instruments be used to trace and record contours. The Accelerotor was a laboratory device developed under the research committee of the American Association of Textile Chemists and Colorists and showed promise of providing data on the abrasion resistance and colorfastness of fabrics in a very few minutes.

Announcement was made of Du Pont's plans to erect a $5 million textile research laboratory at Wilmington to provide facilities for fundamental and applied research on all phases of textiles and their processing, and a $3 million laboratory for research on Dacron at Kinston, N. C.

The International Organization for Standardization group met in New York in November and agreement was reached among the representatives from many nations on the general principles of colorfastness tests and specific procedures. While efforts have been made from time to time to establish standard labels for fabrics designed for certain end-uses, a highly original system was adopted by a German organization, using pictures of a "cat," indicating that material was suitable for dry-cleaning only, a "fish" for gentle washing, and "elephant" to designate thorough launderability. J. B. Goldberg. *Textile Bulletin 79,* 49, 50, 52, 54, 55, 56, 58 (January, 1953).